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# TECHNOGEOGRAPHY, OR THE RELATION OF THE EARTH TO THE INDUSTRIES OF MANKIND.*

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## *Definition of the Earth in this Connection.*

By technogeography is meant the study of the relationship between the earth and human arts and inventions.

Anthropogeography is the consideration of the earth in its broad connections with the whole science of man, including his body and his mind, his arts, languages, social structures, philosophies and religions. Of this broader subject there are many subdivisions; but at this time your attention will be directed to the activities of men as effected and affected by the earth, to which study the term technogeography is applied.† The arts of mankind have changed the face of nature, and some charming books have been written upon the subject of the earth as modified by human action.‡

*Annual address of the President of the Anthropological Society of Washington, delivered January 30, 1894.

† *Ethnogeography* would be the science of the relations of the earth and its forces to the creation of the several races or kindreds of mankind; *Glossogeography*, of the languages of mankind as effected or affected by the earth; *Mythogeography*, of the relation of the earth to mythology; *Esthogeography*, of the fine arts as born and nurtured by nature, and so on.

‡ George P. Marsh: Man and Nature, N. Y., 1864, Scribner. Arnold Guyot: The Earth and Man, Bost., 1865, Gould. But the father of this science is Karl Ritter, in Die Erdkunde im Verhältnisse zur Natur und Geschichte des Menschen, Berl., 1822-'59, 10 vols.

But now we are to trace out a few of the great industries of our race as they were provoked and developed by their terrestrial environment; in short, human actions as they were shaped and modified by the earth.

In this inquiry the earth as modifying human life includes the land surface down to the bottom of the deepest possible mine or artesian well or geological stratum; all the aqueous mass—that is, every drop of water in the seas and out of them, for there is no telling when any drop may enter the circle of human agencies and ownerships; the circumambient air, every gallon of that aërial ocean which swathes the world and vitalizes all living things, the common carrier of clouds and birds, of health and disease, of music and perfumes, of industry and commerce. As modifying human conduct, as subject of preëmption and monopoly, not only the masses just mentioned are included, but motions and powers, even gravity, mechanical properties, physical forces, chemical activities, vital phenomena of plants and animals, that may be covered by patents and their uses become a matter of legislation and diplomacy.

### *Definition of Human Industries.*

The industries here discussed are chiefly the commonest trades and daily occupations of men, in which material substances and terrestrial forces are involved. However, as Mr. Spencer and other writers on dynamic anthropology well observe, even the most intellectual and spiritual activities of men have their operative side, their apparatus and sensible processes. The earth not only modifies the trades and crafts, but all human activities, however evoked.*

1. In the first place, I ask you to remember that every action in every industry, in every climate, and every status of culture involves five substantial elements:†

*a.* Raw materials in endless varieties and attributes.

*b.* Motive power of man, beast, fire, air, water, gas, hard substances, chemistry, electricity.

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*The reader cannot afford to neglect a little book by Thomas Ewbank, entitled, "The World a Workshop; or, The Physical Relationship of Man to the Earth." N. Y., 1855, Appleton.

†These are in addition to the formal or intellectual cause, of Aristotle.

*c.* Tools and machinery, including both their manual or operative and their working parts and the mechanical powers involved.

*d.* Processes, simple, complex, and compound—that is, single motion for single function, many movements for simple function, many motions for many functions.

*e.* Products ready to supply desires or give satisfaction or to enter as material into new series of changes.

The progress of mankind means the greater and greater elaboration of these—more uses or functions for the same species of material furnished by the earth, more species of the earth's materials for each function or piece of work; more uses for each form of power, and more forms of power involved in the same use; more parts to the handle and working portion of the same tool, and more tools for the same operation; more movements or forms of motion in the same process and a greater variety of processes to compass the very same result; more elements or products of industry to gratify a single desire, and the creation of new and more exacting desires by the refinement of society.

2. I beg you to hold in mind, secondly, the fact that all voluntary human actions are carried on to satisfy wants or needs, bodily, mental, spiritual, social, beginning with the lowest animal cravings and ending with the highest aspirations of the most exalted men; also you must remember that these needs have been developed and organized by a larger and larger acquaintance with the earth and its resources.

The order of arising of these wants, both in the child and in the race, have been for food, rest, shelter, clothing, defense. The order of intellectual wants was in the same lines. Each craving has grown from simplicity and monotony to variety and complexity, involving more activities in the same process, more and more varied mental processes in the same activity, ending with coöperative thinking of higher and higher order.*

3. Remember, thirdly, that these industries for gratifying desires may be grouped into the following classes as regards the earth, together constituting a cycle and each involving the five elements before named:

* *Cf.* Lester F. Ward, Dynamic Sociology, 1893, 2 vols.

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*a.* Going to the earth for raw materials—fishing, hunting, gleaning, lumbering, mining. Some of these may be enlarged by cultivation and domestication in order to stimulate the generosity of the earth.

*b.* Carrying, hauling, transporting, in any stage of manipulation, using the powers furnished by nature.

*c.* Manufacturing, changing the physical, chemical, or vital form, or the size or shape, or combinations of materials for some useful end.

*d.* Exchange, barter, buying, selling, with all the handling that is involved. In this there is a rude mimicry of the correlation and conservation of energy.

*e.* Consumption, the storing and using up of the finished product, either to wear it out or to make it the raw material of another cycle of activities of the same kind. In brief, the sum of human industries is the arts of exploitation, cultivation, manufacture, transportation, commerce—extremely simple in primitive life, infinitely complicated and interlocked in civilization. The industries of men, from this point of view, are the transformation of terrestrial materials, by means of terrestrial forces, according to processes of which the earth set the earliest examples, and all this to gratify human desires.

### *The Earth as the Producer of Mankind.*

The earth is the mother of all mankind. Out of her came they. Her traits, attributes, characteristics they have so thoroughly inherited and imbibed that, from any doctrinal point of view regarding the origin of the species, the earth may be said to have been created for men and men to have been created out of the earth. By her nurture and tuition they grow up and flourish, and folded in her bosom they sleep the sleep of death.

The idea of the earth-mother is in every cosmogony. Nothing is more beautiful in the range of mythology than the conception of Demeter with Persephone, impersonating the maternal earth, rejoicing in the perpetual return of her daughter in spring, and mourning over her departure in winter to Hades.*

*See also Hill, Genetic Philosophy, N. Y., 1893, Macmillan, and the teachings of Max Müller's school in the interpretation of Aryan mythology.

The human race is put into relation with all bodies through gravitation, with all mineral, vegetal, and animal substances through the laws of physics and chemistry; with the vegetal and the animal kingdom through the additional phenomena called life, and with all animals through mentation.*

*The Earth as a Storehouse of Materials.*

The earth is also a great warehouse of materials of infinite qualifications for gratifying human desires.

This is apparent enough to any one who reflects about it, but few persons think of the long ages during which these substances were being compounded and compacted. These materials are the foundation of all technique and all styles of technique—textile, plastic, graphic, glyphic, tonic, and landscape. For them the earth not only furnishes the raw stuffs, but the apparatus and different motives to different races.

We should not overlook the fact, however, that the greatest care of time has been bestowed on that thin pellicle of the earth called the soil, from which come our food, and that of our domestic animals, our clothing, our habitations, our vegetal and animal supplies, and even the sustenance of the marine products upon which we prey. I have not time in this place to speak of the labor bestowed by nature upon what Professor McGee calls "the veneer of brown loam," out of which the most of human activity has sprung.†

Before quitting the subject of the study of the earth as a warehouse the student ought not to overlook the varied characteristics of these resources. The qualities of things are the earth's, the grains and colors of the same stone, the elasticity and fibres of timber, the plasticity and temper of clays, the malleability and ductility of the same metals, and so on. So marked are these that in our higher civilizations we must have iron from half a dozen countries to conduct one of our complex establishments.

* See de Quatrefages, L'Espèce humaine, 12, Bib. Sc. Internat., Paris, 1877.

† Henry Balfour: Evolution of Decorative Art, London, 1893, Percival. W. H. Holmes: Evolution of the Æsthetic, Proc. A. A. A. S., xl, 239. W J McGee: The Mississippi Old Field, A. A. A. S., 1891. But especially Ruskin in "Modern Painters," and, indeed, in all his writings about art.

The very diversity of the same material from place to place has resulted in the production of the greatest possible variety of skill.

How quickly the lower races of men recognized these qualities and put them to use, not only discovering that stone is flaky and bois d'arc elastic, for instance, but that there are certain conditions under which these qualities exist more favorably than in others.

*The Earth as a Reservoir of Forces.*

The earth is also the reservoir of all locomotion and power useful to man.* Even the strength of his own limbs and back is derived from the food which she bestows. I do not speak of that, however, but of the substitutes therefor. She gives to the North American Indians the dog, to the South American the llama, to the people of the eastern continent the horse, ass, camel, elephant, and ox to convey them about and to carry or draw their loads.

The winds blow upon the sails and turn the mills, the waters set in motion the wheels and transport the freight. The steam is a still more versatile genius of power, and electricity just enters upon its mission. Coal, as a cheap source of energy, enables men to substitute for areas of raw material areas of manufacture and, indeed, to create areas of consumption.

The several kingdoms and forces of nature give rise to their several bodies of arts, each of which springs from the earth, and their investigation may be named as follows:

1. Physiotechny, of arts dependent on the physical forces of the earth.
2. Pyrotechny, of arts of creating and utilizing fire.
3. Anemotechny, of arts based on uses of the atmosphere.
4. Hydrotechny, of arts based on the uses of water.
5. Lithotechny, of arts based on uses of minerals and rocks.
6. Phytotechny, of arts based on uses of plants.
7. Zootechny, of arts based on uses of animals.

It would occupy too much space were I to elaborate in the most elementary manner the methods in which domestic animals,

* "A great factory or shop of power, with its rotary times and tides." Emerson, Letters, &c., 135, Bost., 1883.

wind, fire, water, elasticity of solids, elasticity of gases, explosives, chemical action, magnetism and electricity had enrolled themselves in the service of mankind merely to furnish power to do the work that in the simplest form is done by hand. Every one of them must have struck terror into the hearts of the first men. By being subdued they obeyed the principle that I have previously laid down of increasing their own usefulness and indispensableness by creating and complicating new wants.

The form of the globe, its coast lines, elevations and reliefs, the amount of sunshine, the properties and contents of the atmosphere, the varying temperatures, winds, rainfalls, the springs beneath the surface, the waterfalls on the surface also act as motives, if not as motive power to all apparatus and all the movements of men.* We cannot eliminate the heavenly bodies from this enumeration, since they furnished clocks and almanacs and compasses to primitive peoples, and longer voyages were undertaken by their guidance in the Pacific than were made two centuries later in the Atlantic by Columbus with the aid of the mariner's compass.

### *The Earth as a Teacher of Processes.*

Exploitation and cultivation, manufacture, transportation, exchange, consumption, as I have previously said, together constitute the round through which commodities are conducted in the progress of industries. The proposition is that the earth was in the beginning and is now the teacher of these activities. There were quarriers, miners, lumberers, gleaners, and, some say, planters; there were fishermen, fowlers, trappers, and hunters before there was a *genus homo*. There were also manufacturers in clay, in textiles, and in animal substances before there were potters, weavers, and furriers; there were all sorts of moving material and carrying passengers and engineering of the simplest sort. It might be presumption to hint that there existed a sort of barter, but the exchange of care and food for the

* Gardiner G. Hubbard: Relations of Air and Water to Temperature and Life, Nat. Geog. Mag., Wash., 1894, vi, 112–124. N. B. Emerson: The Long Voyages of the Hawaiians, Honolulu, 1893. A. W. Greely, Internat. Pressure and Storm Charts, Signal Office, Wash., 1892.

honeyed secretions of the body going on between the ants and the aphidæ look very much like it.

The world is so full of technological processes brought about among her lower kingdoms that I should weary you in enumerating them. Stone-breaking, flaking, chipping, boring, and abrading have been going on always, by sand-blast, by water, by fire, by frost, by gravitation. Archæologists tell us that savages are very shrewd in selecting bowlders and other pieces of stone that have been blocked out and nearly finished by nature for their axes, hammers, and other tools.*

In tropical regions of both hemispheres where scanty clothing is needed certain species of trees weave their inner bark into an excellent cloth, the climax of which is the celebrated tapa of Polynesia. Furthermore, the fruits of vines and trees offer their hard outer shells for vessels and for other domestic purposes, for adornment of the persons, and as motives in art and handicraft.

Among the animals there is scarcely one that has not obtruded itself into the imaginations of men and stimulated the inventive faculty. The bears were the first cave-dwellers; the beavers are old-time lumberers; the foxes excavated earth before there were men; the squirrels hid away food for the future, and so did many birds, and the last named were also excellent architects and nest-builders; the hawks taught men to catch fish; the spiders and caterpillars to spin; the hornet to make paper, and the crayfish to work in clay.

2. The very genius of transportation and commerce also is taking commodities from places where they are superabundant and from ownerships where there is an excess over needs and placing them where they are wanted. It is a change of place to relieve excess and to supply demands. The savages had their changes of place and of ownership, constituting a primitive or elementary commerce, having all the characteristics of the modern; but I am now speaking of something that preceded even this. Nature had her great centers of superabounding material and took pains to convert this excess into supply against scarcity. She had devised her balance-wheels to effect uniformity of life and to preserve it against famine and failure. In illustration of this let me point out two or three examples:

* Consult the papers of J. D. McGuire in the American Anthropologist.

*a.* She stored up the excess of one season to supply the scarcity of another season of the year. Many examples of this could be cited. All over the earth bees gather honey from ephemeral plants that man cannot eat and store it away in enduring form to be used by man in time of need. In certain regions of California the piñon seeds grew so abundantly that the Indians could not gather them; but the squirrels did lay them up in vast quantities, fed on them in winter, and themselves were eaten by the savages at a time when meat diet was most necessary, and gave to the Indians a lesson in economy and storage.

*b.* She used the excess of one locality to supply the dearth of another locality. In some places along the great lakes the wild rice (*Zizania aquatica*) covers thousands of acres and feeds millions of water fowl. These same creatures are the source of food for the Eskimo, who never saw a spear of grass nor ate a mouthful of vegetal diet. They are also wonderful teachers of the art of migration. Seeds of plants entered into this natural transportation through rivers and ocean currents, through winds and by the agency of birds, even of migratory birds, and set up in their progeny new centers of supply on distant shores.

*c.* But the most marvelous of all these commercial enterprises of nature is that in which she converts apparently inaccessible and unutilizable material into inexhaustible supplies for every industry of man. A wonderful example of this is found in the littoral feeding grounds. There is a bench of land under the sea skirting every shore and reaching under all estuaries. It is not deep. Indeed, it is the connecting link between the land and the profound sea. Upon this plateau the débris of the fertile lands and fresh waters are daily poured and myriads of the lower plants and animals are developed. Here are nourished cod, shad, herring, salmon, oysters, clams, and so on. The fish, after attaining maturity, actually swim up to men's doors to be captured; also upon this feeding ground are nourished the sea mammals, which have been indispensable to the life and happiness of our northern aborigines. It is true that every useful plant is converted by nature out of material which men cannot use. Long before Texas cattle were bred in one place and driven hundreds of miles to market, nature reared fish and walrus

upon her enormous pasture-lands under the sea and drove them to market herself.

3. From one point of view the languages and literatures of men have been taught and suggested by the earth. Many words in all languages are imitations of the cries and sounds of nature. The motions and actions of her creations and creatures give rise to names for our common activities. By figures of speech the conduct of these beings furnishes the literary man and the moralist with means of graphic and pleasing description.*

Furthermore, every act is an expression of thought, and everything made by men is a testimony to the intellectual life of the man who made it. Even our most poetic and spirituelle conceptions find their counterparts in phenomena around us.

4. The earth has furnished man with examples of many forms of social life, from the absolute promiscuity of gregarious creatures to the monogamy for life among the eagles. The problems of society, clanship, government, and politics were working themselves out under the eyes of primitive man. †

5. In the forms of its creeds and its cults, humanity does not seem to be able to get away from earthly patterns. The Elysian fields, the Valhalla, the life that now is, reflected upon the life beyond, are all shaped after models familiar upon the earth. Likewise the cults of men, involving places of worship, social organization, times of meeting, festivals, and the like, necessarily depend upon climate and environment generally. There is a true sense in which religion is physiographic and in its lower forms entirely naturistic.

In her rôle as teacher, however, the earth always compels her pupil to make his own research and applications. I have heard it said of Bishop, the mind-reader, that he would, when blindfolded, find objects that had been secreted at a distance by sim-

* Consult Cushing, Manual Concepts, Am. Anthrop. Bushnell, Horace: Moral Uses of dark Things, N. Y., 1868, 8vo. Weale, J. M.: Derivation of Sounds in Language from Noises made by Animals, Rep. Brit. A. A. S., Lond., 1892–'3, 907. C. Lloyd Morgan: Animal Life and Intelligence. Sir Arthur Henry Helps: Animals and their Masks, Lond., 1883.

† Lubbock, Ants, Bees, and Wasps, N. Y., 1882, Int. Sc. Ser. On the Senses and Intelligence of animals, *ibid.*, vol. 65. Wood: Our Insect Allies, Lond., 1884, 238. C. V. Riley, Presidential Address, Biol. Soc., Wash., 1894. F. Houssa: Industries of Animals, Scribner, 1893.

ply holding the hand of the one who hid them. He relied upon the involuntary or unconscious resistance of the concealer to guide him. When the resistance ceased he knew he was going wrong. I have figured to myself the forces of the earth holding progressive peoples by the hand in the same manner. *She* knew where all the good things were concealed. They find them when she resists. When nature does not resist us she is leading us astray, when she unconsciously holds us back we follow to success in the lines of greatest pressure.

*The Earth as a Whole an Organized Structure.*

Indeed, whatever view my hearers may take of the creation of the earth, and of its resources, and of man, the earth must be looked upon as a thoroughly organized object. You may not believe in the old doctrine of the "Spirit of the world," the Weltgeist of Goethe, and still no living being seems to work with greater harmony of parts. An intelligent spirit seems to be present everywhere, whose conduct is always consistent, whose actions may be predicted for years in advance. Nay, more, this spirit seems to be endowed with like passions as we are and to act for the best interests of men's spirits, helping and cheering the wise, discouraging and demoralizing the negligent. The whole conduct of our globe is of such a character, all its activities and resources are so thoroughly one throughout, that in every respect we are justified in speaking of it as an organism, a being, a creature, a body of living forces, a congeries of intelligent resources. It is in this quasi-active sense that I wish to regard it now in relation to the elements and results of human trades and industries.

Little change has taken place in the globe since man stood first upon it, a naked and inexperienced being. The planet itself was at that time fixed in its orbit and the moon now shines upon the earth at night as it did upon the first man. The sun has, almost unchanged, been witness of all human history. The amount and movements of the atmosphere have not varied perceptibly, though the air may now be deteriorating and the soil wasting through human agencies. The minerals in the bowels of the earth, the genera of living plants and animals are older than man. They were here for his use before he was born.

Continental land masses, oceans, seas, and rivers have altered only a little since the *genus homo* came to dwell upon them.

This is an important series of facts in our study, because the other element of the problem will be an exceedingly variable quantity. The evolution of the earth was complete when man came to stand upon it. The evolution of human arts began where the evolution of the earth left off.

This subject of the whole earth directing human industry may be viewed from two different points—the technic side, or that in which the trades and invention come into prominence, and the physiographic side, or that in which the active forces of nature as determining the trades are more conspicuous. From either point of view there will be seen an orderly procedure, a movement as though some pilot held the helm. Regarded from the former, the genius of man of families, or races, of epochs, seems to be the active and only cause; regarded from the latter, the puissant earth seems to have been more the leader, mover, suggester.*

*The Culture Areas of the Earth.*

Besides this general view of the earth as an organized series of materials and forces, it is necessary also to study it in parts, to anatomize it, as the zoölogists would say. The most cursory glance reveals the fact that there are certain well established worlds within this world. This earth, which seems to be an oblate spheroid, all parts of which are approachable from the rest and their functions almost interchangeable one with another, is made up of great isolated parts or patches, which may be denominated culture or inventional areas, *Oikoumenai* of Aristotle. Each one of the areas has a climate of its own, waters and lands of its own, plants and minerals and animals; indeed, a physiography of its own; so that when a group of human beings have, in the fortunes of existence, found themselves in one of these

*Upon the antiquity of the general plan of earth structure consult J. W. Powell: The Laws of Hydraulic Degradation, Science, N. Y., 1888, xii, 229–233; also his Colorado River volume. C. E. Dutton, Monograph, ii, U. S. Geol. Survey, 72, 219, and An. Rep., ii, 60, 61. C. D. Walcott: Geologic Time, J. of Geol., Chicago, 1893, i, 239–676.

The author has developed the inventor's side of the question in a series of papers on Primitive Inventors and their Patents.

spaces they have been irresistibly developed into a culture and trades and industries of their own. This was the centrifugal stage or the evolution of industries. It was just as though they had cut themselves off from the rest of their species and gone to inhabit another world.*

The forces acting to create these culture areas were, first of all, earth forces, the same that were at work to build the earth. After the general plan of the entire structure was laid down, the fitting and furnishing of the various apartments was a matter of local appropriation of these forces. Solar heat, moisture, terrestrial forms and movements horizontally and vertically coöperated in each area to stamp upon it the type of its life. The result in each instance was to create a series of conditions suitable for some lives and not for others, suitable for man in one stage of his culture journey and not in others. In regard to the capability of meeting man's necessities, the regions of which we are speaking may be thus characterized:

1. Areas of discouragement, too cold, too hot, too wet, too dry, too elevated, malarious, infested with noxious insects or beasts, too thickly forested. By and by these very regions might become centers of greatest activity.

2. Areas of monotony. Upon this point Schrader uses the following comparison:

"Life commenced in the water, where the changes of light, heat, pressure, food, and occupation were very slight, attained

* "I take leave to use the Greek term *oikoumenē*, which denotes any considerable portion of the earth's surface whose parts intercommunicate, but which is isolated from the rest of the world." Payne, Hist. of America, Oxford, 1892, Clarendon pr., i, 27, quoting Aristotle, De Mundo, iii: The order of development of the *oikoumenē* was, 1, the creation of small, isolated areas; 2, the commingling of areas; 3, the establishment of one area, the world embracing *oikoumenē*. These culture areas are called "Geographical provinces" by Bastian and "Areas of characterization" by de Quatrefages. See D. G. Brinton, Races and Peoples, N. Y., 1890, Hodges, 94, quoting: Haughton, Lect. on Phys. Geog., Lond., 1880, 273; —Bastian, Zur Lehre von den geog. Provinzen, Berlin, 1886;—De Quatrefages, Hist. Gen. d. Races Humaines, Paris, 1889, 333;—Achelis, Die Entwickelung der Modern Ethnologie, Berl., 1889, 65;—Darwin, Descent of Man, 169. See also Le Bon, The Evolution of Civilization and the Arts, Pop. Sc. Month., N. Y., 1892-'93, xlii, 342-349. F. W. Parker, The Relation of Geography to History, Nat. Geog. Mag., Wash, v, 125-131.

its complete development on the land, in an element more delicate and more mobile, in the midst of reactions more multiple and more varied."

This same rule applies to the lands themselves. Those in which men occupied a homogeneous environment were like the sea, and the people were little differentiated. The arctic regions in their marine mammals and semi-aquatic men furnish a good example of this class.

But in the equatorial regions of the globe there occurs much of the monotony of environment which characterizes the circumpolar region. In the latter man exhausts himself in his efforts for subsistence; in the former he does not develop because nature supplies his few wants and at the same time overwhelms the work of his hands; but in Australia all the unfavorable conditions of human existence are exaggerated. Isolation, aridity, want of indentations and relief, absence of useful plants or animals; these negative conditions are certainly, of all in the world, least favorable to man.

Schrader follows the plan of establishing anthropological zones, but tidewater, Piedmont, and mountain areas are also important.*

3. Areas of two elements, two elevations, two seasons, two occupations, two wants. This will be exemplified further on.

4. Areas of many elements, with variety of climate, scenery, sources of material supply, and means of communication, stimulating the appropriation of nature's largess.

As regards the creation of races of men, these regions were ethnic areas. Respecting arts and industries, they certainly were technic areas, and therefore they were most important elements in the present study.

In the most primitive life exploiting, transportation, manufacture, barter, and consumption in each culture area extended

*Rev. Mens. de l'Ecole d'Anthrop., iii, 205–208, Paris, 1893, Alcan; also McGee, The Earth as the Home of Man, Saturday Lecture, 1893.

"Bananas and plantains are rapid growers, producing fruit in a twelve month. A constant supply is kept up during the year. The fruit is eaten green or ripe, raw, boiled, roasted, and fried. Humboldt says that on a given area it produces 44 times more nutriment than the potato; 133 times more than wheat. It reproduces perennially and abundantly and may be called an 'institution for the encouragement of laziness.'"—Squier, Mosquito Coast, 109, Lond., 1857.

over little space, used only a few materials, changed their form only a little, were in the hands of a few persons, and their products were consumed on the spot. A Zuñi woman walks five miles to the mesa for clay, carries it home on her back, makes it into pottery, decorates and burns it, and then wears it out in cooking, water-carrying, or storing food. She is at once miner, common carrier, potter, artist, cook, and purveyor. Her culture area does not embrace more than 100 square miles.

Even now many of these separate culture areas, in spite of the mixing of people in the historic past, may still be traced. From the North American continent the savage has been nearly moved, but scholarship is able to lay down the home sites of all the historic families; the habitations of their various stocks are marked out geographically.

On the extreme northern limit of America there is a fringe of icy coast. You may commence to trace it in the northeastern corner of Greenland. The whole shore of this land mass forms a part of that area, down to Cape Farewell and up to Smith's sound. Resuming your journey about the southern limit of Labrador, you are to explore Baffin land, all about Hudson bay, among the islands of northern Canada, past the mouth of Mackenzie river all the way to Bering strait. The Arctic shores of both continents above and below these straits as far west as Lapland, in Norway, must be included, and the Alaskan coast as far down as Mount St. Elias. This is the Arctic, the interhemispheric world. . . .

Immediately in contact with this hyperborean oikoumenē is the birch-bark region, extending in both hemispheres. The house, the boat, the snowshoe frame, the vessels for food and water and for cookery, the lumber for all arts, and the food for much of the game are hence derived. It is the birch-bark country in space, just as we speak of the stone age, the bronze age, the steel age, in time. In early culture they did not ship birch wood and bark, but birch art sprung from birch environment. Geography was the mother of the arts. . . .

The land-locked inlets of America's northwest coast, extending for more than a thousand miles, being a safe and easy mode of communication between Thlingit, Haida, Tsimshian, Nutkans, and Coast Salish tribes, not only was there much borrow-

ing of myth and speech and commingling of blood, but arts were interchanged and an incipient commerce engendered.

The great interior basin of the United States is arid, but abounds in excellent seed-producing plants, and here the people were bread-eaters and all the term implies. The plains of the great West were the abode of innumerable buffalo, and there the tribes, regardless of ethnic differences, were tall meat-eaters, dwelling in hide teepees, clothing themselves in skins, and practicing a hundred arts with reference to this one animal. On the east coast of North America were the clam, oyster, turtle, abundance of mackerel, shad and herring, plentiful supply of wild fowl and mammals and fertile lowlands and diversities of wood for their implements. These varied conditions produced on the whole the finest Indians north of Mexico. The same careful scrutiny of the Mexican plateau, the Orinoco, or the Amazon drainage, of the three culture elevations of Peru, of the river systems of Africa, of the island groups of the Indo-Pacific, would, if we had time to go over them, show us that the common trades and daily toil of the people run in grooves like a train of cars. Each people had ransacked its own environment and got the best out of it that their grade of culture was capable of extracting.

It is not necessary to continue the enumeration of these technic areas of the earth. It may be truly said that each distinct zoölogical or botanical region was capable of developing a distinct body of arts. And, per contra, if there be found a people in possession of industries that are unique, then the region must be ransacked for the environment and resources that endowed and patronized these industries. The art and the craft are of the region. No people are to be held responsible for the development of any of nature's gifts if nature has never bestowed them.

In America, when it was discovered, the technic regions were not equally advanced in the culture of their inhabitants. In the valley of Mexico and in Central America and on the Pacific coast of the Andes were the highest arts. The western continent, as a whole, was not the best fitted by nature for man's advancement. The mammals would none of them yield their milk and there were no draught or pack animals except the dog in the north and the llamas in the south. All the arts of the new world were the works of men's hands; consequently the whole

area of culture skill was little elevated compared with that of the eastern continents. But the Mexican and the Peruvian body of industries occupied the most artificial centers.*

*The Earth as a Single Culture Area.*

No sooner had the varied riches of different areas begun to manifest themselves to one another than human feet took up the march which has given the whole earth to the whole species, and promises to make of it, by and by, a single neighborhood. In short, the earth developed in isolated peoples a separate set of industries. With your permission I shall call it the centrifugal or outward movement.

Next, it brought these separate cultures together as a higher composite organization of industry, and tends at last to make all men dependent upon the entire earth. This you will let me call the centripetal movement.

The centrifugal movements were the actions of savages and barbarous peoples. The centripetal movements were toward civilization. The movements toward widening the oikoumenai were:

1. Intra-areal, or inside the geographic province to enlarge it.
2. Inter-areal, between small contiguous provinces.
3. Inter-regional, overstepping great natural barriers.
4. The march of aggressive campaigns.
5. Inter-continental, the beginnings of universal conquest.
6. Inter-hemispheric, the periods of great discoveries.
7. Universal.†

*The reasons for this are worked out in Payne's "History of America," volume i, with consummate skill.

†Indeed it would not be difficult to give examples of some of these in their order. The experience of every family and clan is expressed in the following schedule:

1. Family or Gentile expansion: "Behold now the place where we dwell with thee is too straight for us." 2 Kings, vi, 1.
2. Algonquian, Carib, Malayan expansion.
3. Ancient Mexicans and Peruvians; all the Mediterranean races.
4. Egypt, Assyria, Phœnicia, Rome, Germany, Russia.
5. Jenghis Khan, Alexander, Napoleon.
6. Columbus, Vasco da Gama, Drake.
7. The present attitude of the Caucasian race.

The primitive occupation of different culture areas on the earth prepared the way for the diversification of the ways and means of gratifying human desires. This centrifugal man developed the culture areas and their arts. The more advanced centripetal man brought the arts together and thus provided for their universal distribution, elaboration, and perfection.

Barter and long journeys for subsistence, cultivation of plants and domestication of animals, the use of machinery, and the storage of food were not unknown to pre-Columbian Americans. In one grave near Chillicothe, Ohio, were found copper from northern Michigan, obsidian from Yellowstone park, mica from North Carolina, pyrula shells from the Gulf of Mexico.

Ivory hunting and other natural causes set the African negroes on the move before the days of recorded history, so that there is no longer a negro race. Their original neighborhood is not known; their languages are better means of classification than themselves; their arts are hopelessly mixed.*

In studying the migrations which might have led Mongoloid peoples to America, the escape from the regions of an ever-vanishing food supply in the rear and the pursuit of an inviting food supply in front played a prominent part. Two hundred years ago and more the upper Pacific, the Bering sea, and the plains of the great West contained far the largest storages of human subsistence in the world. The fish, the seacow, the Arctic mammals, the caribou, the buffalo, in a certain sense, peopled America.†

In the Indian ocean and the Pacific, six hundred years ago, the Polynesian race suddenly became the Norsemen of that area. In their improved canoes, with sails and outriggers, they set out from Tonga and visited Easter islands, on the east; Madagascar, on the west; New Zealand, on the south, and Hawaii, on the north, each journey being not far from two thousand miles from home. No other motive was assigned but to follow the leadings of nature to behold and enjoy more of the earth.‡

*The capture of women and slaves and other social causes urged on these movements, but these will be considered in another paper.

†Consult Payne's History of America for the importance of the food quest; also Morgan's Essay on Migration in Beach's Indian Miscellany.

‡N. B. Emerson: The long Voyages of the Ancient Hawaiians, p. 34, Hawaiian Hist. Soc., Honolulu, 1893.

In this same Malayo-Polynesian area, especially in the region extending from Australia to Indo-China, there is a curious mixing of the regional question with that of race. Here dwell Negroes, Malays, Polynesians, and Australians; but the material out of which things are made, the implements with which they are made, and the products of industrial arts are clearly of the soil, and there is great confusion of industry and race, undergoing the process of transformation from segregation to unification.

Racial peculiarities overlap the natural elements of industry and the technogeographer and the ethnogeographer are merged into the ethnotechnologist.

The Mediterranean sea remained a barrier until many diverse civilizations were developed on its African, Asiatic, and European shores. It was at first a means of dividing peoples of the same race until they had elaborated their several contributions to industrial processes.

The second stage of industrial development had begun when the first column of Aryan history began to be written.

Of early Caucasian and Mongolian culture only a few hints can be given. In prehistoric times precisely the same law was in force which the American continent revealed to the eyes of the discoverers; but another state of things was in operation there in historic times, namely, the working out of the higher law of commerce and artificiality of life, in the operation of which the genius of man rises superior to natural barriers and exigencies and turns whole continents or the whole earth into one organized culture area or *oikoumenē*.

No one can tell the region that gave to man the cereals of Europe. It is said that rice is a contribution from southeastern Asia, but whence wheat, rye, barley, millet, oats? Fruits, like apples, plums, quinces, peaches, belong to the same category. The date may be accredited to Africa and the grape to many lands. But there is no account of our race at a time when the genius of invention was being developed through them in their separate *oikoumenai*. The historian was too late on the field to record the gathering of them in a wild state.

Likewise the domestic animals. The dog offered his services as a hunter and a beast of burden, the cat as the enemy of vermin; the cow, horse, ass, elephant, sheep, goat, camel, llama were

furnished by nature to enhance the arts of food, shelter, clothing, manufacture, transportation, and to set an example of industry; but of the transition there is no record. The second stage of industrial development had begun when the second volume of Aryan history was about to be written.

*The Earth in Relation to the Higher Artificial Life.*

In primitive life culture areas were chiefly the regions where abounded the raw materials. They were in fact areas of natural exigencies. But in higher civilization the arts have usurped the prerogative of nature and created artificial culture areas. Plants have been made to grow and animals to thrive thousands of miles from their original home. Materials of all sorts are carried to manufacturing centers to be made up into forms for commerce and consumption. These are artificial technic areas, whose geography is an essential study in political economy.

For example, the Muskoki Indian woman used to go to the fields, gather the wild hemp, carry it home, soak it, hackle it, spin it, weave it, and then use it up on the spot. But on that very ground now grows the cotton, a foreign plant, raised by one man, ginned by another, hauled on wagons to railroads, thence carried to the sea and across it to great manufacturing towns, where it is hauled and spun and woven, and hauled and shipped and sold and sold until the product may be seen in every portion of the habitable globe. The geography of this one staple in its multiform transformations, brought about by the gradual appropriation of all the forces of the earth and then its movements until at last it has been caught in the current of every terrestrial wind and followed every world-encompassing oceanic stream, would exemplify what I am trying to say about the coming of the globe to be one united *oikoumenē*.

In all this the race has grown, not independent of the earth, but more dependent upon it. Artificial and domesticated supplies of material are as much from the earth as the wildest. Men in devising tools and machinery and engines to do the work of their hands have had to go to their mother for them. They use other forces than their own, but they are still forces furnished by the earth. They have multiplied invention upon

invention, but every one of them is a device for using a great loan already in hand for the purpose of raising a larger one.*

At one time men simply breathed the air and moved about and clothed and sheltered themselves at its behest. It came gradually into human history somewhat as follows:

1. As a terrestrial force, chemical, mechanical, geological, and as supporter of life.
2. In the production of climate and temperatures and as instigator of clothing and habitation.
3. As distributor of seeds, insects, birds, &c.
4. As promoter of fire, draft, and the like.
5. In the distribution of pollen, microbes, and other minute organisms.
6. The mover of sails advancing from the use of local breezes to that of the trades.
7. The mover of wheels and machinery.
8. As an elastic force in mechanics.
9. In aërial transportation.
10. In science and religion.†

In this way fire wrought for man, first making his house, then as a master of his childhood, and last of all acting the part of maid of all work. The order might be summed up as follows:

1. Earth-builder, moving the strata vertically.
2. Fierce weapon against beasts, men, microbes.
3. Preserver of substances, food, and other material.
4. In cooking.
5. Artificial heater for the dwelling.
6. For illumination.
7. In mechanic arts.
8. In agriculture.
9. In locomotion.
10. In generating higher forces; in literature and myth.

After the same fashion it would be possible to enumerate the varied services of water:

1. Geological worker in vapor, frost, snow, rain, dew, and as carrier of materials.

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* For the history of this power in nature, first to create the earth and then man, and then to bring the earth under the dominion of man, see Powell's lectures on biotic and anthropic evolution, Am. Anthropologist.

† In this last connection read Ruskin's "The Queen of the Air."

2. In springs and wells and water works.
3. Carrier for man in rivers and open waters.
4. In artificial ponds for fish and irrigation.
5. In canals and enclosed basins.
6. In the undershot wheel.
7. In the overshot and the turbine.
8. In the form of steam.
9. In hydraulic mining.
10. In comprehensive service, as at Buffalo and in other cities.

The minerals, plants, and animals used at first by man could be counted on your fingers.

The growth of culture has increased the number of useful species as a whole, the functions of each one, the amount of labor bestowed upon each individual element, the depth of mines, the amount of waste, the distances traveled and the velocity of locomotion, the difference of weight between the passenger or freight and the weight of the train or the ship.

In this partnership between man and the earth the progress of culture has been from naturalism to artificialism; from exploitation to cultivation and domestication; from mere muscular power to more subtle physical force of man, of beast, of water, of air, of fire, of electricity; from tools to machinery; from simplest imitative processes to highly complex processes, involving many materials and motive powers and inventions; from short journeys to long journeys; from mere barter to world-embracing commerce; from monotonous and monorganic food and clothing, shelter and furniture, mental and social appliances to forms as complex and varied as the imagination can conceive. And when the supply gives out, it is not the earth that fails, but it is the comprehension and the skill of men. The race that used to drag out centuries in learning one letter of the industrial alphabet, leaving its offspring to repeat the process, now catches new secrets in every hour and perpetuates the understanding of them for posterity.

In that long journey from natural to artificial life the resources by which industries have been fostered underwent varied fortunes. In another place I have characterized the periods of human land or earth holding:

1. The period of earth building and soil building—man absent.

2. The period of harmless dependence. The earth took care of man, who did little to waste the earth.

3. Man attacked the earth with firebrands, burning forests and creating wastes. The style of agriculture called coomry in India had here its incipiency.

4. The age of mining began, the bow and the harpoon were invented and the wholesale destruction of animal life set in.

5. The commencement of plowing—that is, of the era of wasting the soil and sending it to the bottom of the waters.

6. The age of subduing the natural forces, the commencement of machinery.

7. The beginning of economy.

8. The age of artificial production and propagation.*

In this evolutionary process some of the materials and plants and animals were:

1. Destroyed irrevocably.

2. Converted into other forms, domesticated, and preserved.

3. Abandoned and more useful materials took their places.†

The fate of natural forces and resources may be summed up as follows:

1. The sun's heating, illuminating, and chemical power unlimited and inexhaustible.

2. Consequently, wind and water power and electromotion beyond the capability of man to exhaust.

3. The mineral kingdom—most easily wasted, air vitiated, water contaminated, fuel exhausted, soil washed away, and its most delicate ingredients used up forever—receives the most anxious thought of legislators. For the wasted soil man finds a partial compensation in irrigation and in the subaqueous feeding grounds. Chemistry is making long strides to render the species independent of the fertile portions of the soil.

4. The fate of the vegetal kingdom is easy to predict. The useful plants will be preserved and multiplied; those that are useless and noxious will be treated with indifference or extermi-

* "The Land Problem," Lectures Brooklyn Ethical Assoc., N. Y., 1892, 119.

† W J McGee: The Mississippi Old Fields, A. A. A. S.,1891. G. P. Marsh: The earth modified by human action, in "Man and Nature," N. Y., 1864, Scribners.

nated. For a long time, however, the natural supply will be more than sufficient.*

In the three elements of food plants, fibre plants, and forest production the world seems stocked for all time.

5. Animal life must become altogether subservient to man or at least innocuous. Capabilities of variation and multiplication are unlimited both on land and in the sea. Indeed, the marine life of the great estuaries and coastal plane will restore to man a portion of his losses through denudation, impoverishment of the soil, and through sewage, and species of animals now useless will be yoked to service.

You can see how these transitions from discrete and independent culture areas to one, all embracing *oikoumenē*, must modify the politics and the thought of the world. Little did the Bongo smith care about ships or trains, about treaties or tariffs. His materials were at hand, his motive power was his good right arm, his tools were the hardest rocks he could find, his transportation was a short haul on human backs, his commerce was barter, his goods were consumed near by.

While the higher life of industry was being elaborated by the commingling of diverse occupations, the peoples were commingling under other motives. Old, natural barriers were swept away, it is true, but new, artificial, political barriers were set up, often making war across industrial boundaries and interrupting the proper flow of the true culture. The state boundaries of the United States are excellent examples. Indeed, the bloody wars that have cursed the earth have been for the most part for the possession of its material resources by peoples having false artificial limits.

The higher life of industry, the true artificial life, by the commingling of the arts that were severally developed in culture areas, found itself at war with the ethnic life, which has formed itself on entirely different principles.†

The end is hastening, however, when the false and unnatural political boundaries will be swept away or ignored, the non-

* See Riley on the enormous amount of honey that goes to waste through want of bees to gather it.—Presidential Address, *ut supra*. (quoting Meade on the best fruits).

† Gardiner G. Hubbard: Geographic Progress of Civilization, Nat. Geog. Mag., vi, 1, Wash., 1894.

progressive races extinguished or driven to the suburbs, the play of world-wide action left unincumbered, the flow of world-embracing commerce unimpeded, and every desire of man will be gratified. The development of this higher law of technogeography is left for another occasion.

In conclusion, let me call your attention to the beneficent effect of this alliance between man's arts and the earth. The law seems to be one of mutual blessing and mutual cursing. Poor farmers, poor fishermen, poor miners occupy the worst land or fishing grounds or mines. Each mutually degrades and impoverishes the other. The reverse is true of the shrewd and industrious.

Now, what is fact of these single workers was true of tribes, hordes, races, peoples.

The right progress looks forward to a time when the whole earth will have been exploited, every pernicious plant and animal and man or tribe of men removed, and all that is good domesticated; when the powers of nature will all be harnessed or enslaved; when distance and time will offer no impediment to commerce; when it will be as easy to put production and consumption in friendly union at the springing up of desire as it was for the primitive man or woman. The earth will be subdued by men who will say to the mountains, "Be ye removed and be ye cast into the sea, and it shall be done, and the desert shall blossom as the rose."*

* Already the flooding of the Sahara, the digging of the Suez canal, the interoceanic highway between North America and South America admonish us of the coming end. In primitive times the animals found the tracks across the mountains; the hunters followed the trails; the trains of pack-animals followed the hunters, and by and by came wagon roads and railroads. The savage formerly walked across the water-sheds, then he made portages, then men dug canals, and finally they tunneled the mountains and united all the seas.

## THE KINSHIP OF A TANOAN-SPEAKING COMMUNITY IN TUSAYAN.*

BY J. WALTER FEWKES.

The present article has been prepared as a contribution to the knowledge of the racial affinities of the village Indians of Tusayan. In former articles in *The Anthropologist* I have claimed that the Hopi stock is composite, made up of assimilated additions from Sonoran, Tanoan, Athapascan, Shoshonean, and other tribes. I cannot, therefore, accept the generally received idea that the Hopi have a large enough proportion of pure Shoshonean blood to classify them with other tribes of the Shoshonean stock. Whatever the nearest kinship of the Hopi may originally have been, it is believed that data can be collected in the villages bearing on what it has now become. We may justly expect to find important legendary evidences to guide us in forming a judgment, and evidence of this kind has already been used in support of the theory of the composite nature of the Hopi people. Linguistic evidence, too extensive in character to discuss in this place, likewise tells in its favor; but these arguments indicating the kinship of the race in the past can be supplemented by evidence bearing on its consanguinity at the present time.

The object of this article is to show how far the process of amalgamation of the last important Tanoan addition with the Hopi has gone and how much it has been affected by its neighbors.

It is a well-known fact that Hanoki (Hano, or Tewa), one of the three villages on the East Mesa of Tusayan, is inhabited by those who speak a Tanoan dialect. The date of the arrival of their ancestors in Tusayan is approximately known to be about the beginning of the eighteenth century. It is proposed to discuss how much this stock has been changed during the two

* This article was written while the author was attached to the Hemenway Expedition.

centuries or less which have elapsed since its advent, and incidentally to touch upon the question of how much it has affected the original Hopi stock with which it has been in contact. The latter inquiry, however, is subordinated for the present to the main question, as it cannot be treated intelligently until the data regarding the clan relationships of the neighboring villages, Walpi and Sitcomovi, have been collected *in extenso*. It is plain, I think, that if we can show that a considerable intermarriage of pure Tanoan and Hopi people has occurred we have advanced a step in the direction of a true interpretation of the kinship of the dwellers on the East Mesa, to which, it may be said, *en passant*, our discussion is purposely limited in this article.

There is a historical probability that the departure of the Tanoan colonists from the Rio Grande country and their advent among the Hopi, between the years 1690 and 1710, may have been results of outbreaks against the Spaniards; but it is significant that it is almost universally said by the Hopi that the destruction of Awatobi, which occurred at the close of 1700, took place before the arrival* of the Tewans in Tusayan. As the Tanoan additions to the Hopi communities had the reputation of being "fighters," they would naturally have taken part in the massacre had they been in Tusayan at that time. It is more logical to suppose, as their legends distinctly state, that they arrived in Tusayan after the overthrow of Awatobi.

The language and traditions of the present community of Hano amply prove that the nucleus of the village was Tanoan. The reason they left their home, the route which they took, and their reception in Tusayan are recounted with many details in the stories of the present inhabitants. If any faith can be put in evidence derived from folk-lore, the fact of their origin from the Rio Grande region is well established. Their language, with slight variations, the investigation of which offers an interesting

*The Hopi say they invited the Tewans to settle among them. There is historical evidence that an "embassy" of the Hopis visited the Rio Grande region at about the time the Tewans departed. I refer to the visit of an "Oraibi chief" and twenty other delegates to Cubero in October, 1700. How long after the destruction of Awatobi the Tanoan ancestors of the Hanoans arrived at the East Mesa is not known. The fact that it occurred shortly after the presence of the "embassy" in Santa Fé is significant.

field of study, is similar to that spoken in other Tanoan communities.* There is also good evidence, from a universally repeated legend among them, that the Hopi did not speak or understand the Tanoan language when the Tewans arrived. These are accepted facts which have not been doubted by any prominent student of the Tusayan people. Our discussion, then, is to bring out evidences of the rate of assimilation of a party of Tanoan colonists with the original Hopi † during two centuries, as indicated by the blood kinship of their descendants.

It must be mentioned, however, that the problem is somewhat complicated by the fact that there is historical and legendary authority that other delegations of Tanoans besides that which we are to discuss came, either as refugees or voluntarily, among the Hopi, about the same time. The so-called Asa people are claimed by the Tewans as their kindred, and they both probably left their homes in the east simultaneously. The route which these two contingents took in their migration is said to have been different and the Asa people left some of their number at Zuñi, where their descendants still live. It is likewise said that after they had lived some time with the Hopi a number of them wandered off to the Tse-yi ‡ cañon and intermarried with Athapascan (Navajo) clans. It was thus brought about that they forgot their Tanoan language and spoke Navajo. But

*The Tusayan Tewans recognize the following pueblos as belonging to their original stock, and having their speech: San Juan, Santa Clara, San Ildefonso, Pojoaque, Nambé and Tesuque. The idiom of Taos and Picuris is, they say, a mixture of their own with another, although they claim these two as kindred. The *Ka-wai'-ka* (Keresan) or Laguna tongue is, according to them, mixed with Tewa in Sandia and Isleta. They regard the language of Jemez as different from *Ka-wai'-ka*. Although they recognize that the idiom of Isleta differs slightly from theirs they regard it as modified Tewan. The word Tanoan, to the use of which there are objections, is applied in this article to the speech of the six Rio Grande pueblos claimed by the Tusayan Tewans as their closest linguistic kindred. The determination of whether the differences in the speech of San Juan, on the one hand, and Taos and Isleta, on the other, is great enough to divide the Tanoan family into two linguistic divisions remains a problem. The claims of the Tusayan members of the family are worth consideration.

†Our article deals with the Hopi of the East Mesa, and the deduction may or may not hold for the other Mesa villages of Tusayan.

‡Commonly, but improperly, called "Chelly."

later they returned to Tusayan and became assimilated with the villagers then, learning Hopi as one result. It must then be borne in mind that present members of the Asa people have Tanoan, Hopi and Athapascan* blood in their veins.

We turn now to the blood kinship of the present dwellers in the village called Hano, where the Tanoan language still persists. What facts can be gathered there in regard to the results of the two centuries in which they have been associated with the Hopi?

As a contribution to an intelligent answer to this question Mr. Stephen, in his work for the Hemenway Expedition, has collected the following roster of the present inhabitants of the place, indicating their clan relationships and other significant data.

*Summary of the Tusayan Tanoan Community.*

| | Men. | Women. |
|---|---|---|
| Pure Tanoan; *i. e.*, claiming Tanoan grandparents | 27 | 30 |
| Tanoan mother; Hopi father | 14 | 7 |
| Tanoan mother; Navajo father | 2 | 5 |
| Composite: Navajo, Asa, Tanoan or Hopi | 3 | 7 |
| Walpi, or Asa father and mother; married Tanoans | 12 | |
| Walpi mother; Tanoan father; married Tanoans | 3 | |
| Cipaulovi (Hopi) mother and father; married Tanoans | 1 | |
| Cûñopavi (Hopi) mother and father; married Tanoans | 1 | |
| Navajo mother and father; married Tanoans | 2 | |
| Pai Ute unmarried | 1 | |
| Doubtful | 2 | |
| Total adults | 68 | 49 |
| Tanoans living in Walpi | 8 | |
| Tanoans living in Sitcomovi | 6 | |
| Tanoans living in Cûñopavi | 2 | |
| | 16 | |
| Actual population of adults in Hano | 52 | 49 |
| Actual population of children in Hano | 32 | 30 |
| Population on December 1, 1893 | 163 | |

*This must be borne in mind in discussing the kinship of the Hopi with the Navajo, who are members of the Athapascan stock, according to the best authorities.

*Census of the Existing Tanoan Gentes.*

| | Men. | Women. | Boys. | Girls. |
|---|---|---|---|---|
| 1. Ke′-to-wa (Bear) | 1 | 4 | 3 | 2 |
| 2. Ku-lo$^n$-to-wa (Corn) | 7 | 5 | 5 | 6 |
| 3. Sà (Pi-ba, tobacco) | 2 | 5 | 6 | 3 |
| 4. Ten-yo (Pine) | 8 | 10 | 6 | 5 |
| 5. O′-ku-wa (Cloud) | 15 | 9 | 4 | 2 |
| 6. Nañ′ (Earth) | 2 | 4 | 3 | 3 |
| 7. Ka-tci′-na (Ka-tci′-na) | 9 | 12 | 5 | 9 |
| 8. Tañ′ (Sun) | 1 | | | |
| Husbands of Tanoan women; not belonging to Tanoan gentes.* | 23 | | | |
| Total | 68 | 49 | 32 | 30 |
| Infants | | | 4 | 5 |
| Children older than infants | | | 28 | 25 |
| Children of pure Tanoan parents | | | 2 | 4 |
| Children of mixed Tanoan parents | | | 30 | 26 |

The Ka-pu′-lo (Crane), Pè (Timber), Ko′-pe-li (Pink conch shell), Po-hu′-lo (an herb), Ku-yan-we (Turquois ear pendant), Ku (Stone), and Ta (Grass) gentes are said to have become extinct since the Tanoans came to Tusayan.†

The most startling fact brought out by the summary given above is that there are only *six children whose parents claim to be*

*The matriarchal system prevails among the Southwestern aborigines.

†It must be borne in mind, in a study of the above summary, that as a rule the husband on marriage goes to the wife's home to live, and that the children of the union belong to her gens. It thus results that the Tanoan women do not move from the village in which they were born, and that their children remain in the environment of a Tanoan-speaking community. In this possibly we have an explanation of the fact that whereas most of the Tanoan residents of the Mesa can speak Hopi, few of the Hopi speak Tanoan. The small number of Tanoan men who have married Hopi women make little headway in teaching their children their language, surrounded as they are by Hopi influences. On the other hand, the larger number of Hopi men who have Tanoan wives exert more influence in spreading their language, and the much greater predominance of Hopi people is a strong influence in diffusing their linguistic forms.

*pure Tanoan out of sixty-two, the complete enumeration.* There are only six families in which the father and mother are both Tanoan. The mother of one family which has three of the six children is older than the child-bearing period, and by the restriction which forbids marriage within gentes the probability of pure-blooded Tanoan offspring from these children, when of age, is very much limited. It is not too much to say that in the next generation the percentage of pure Tanoan blood will be so small that we cannot regard the stock as Tanoan.

Of the adults it will be noticed that less than one-half the men and a little above this proportion of the women are Tanoan, and out of one hundred and twelve adults it will be seen that only fifty-four are pure bloods. Taken in connection with the small number of children of pure blood the modification in two generations is very significant.

The presence of twenty-three husbands of Tanoan women who do not belong to Tanoan gentes is a fact full of meaning. This condition has had a most important influence in determining the consanguinity of the stock.

The data in regard to extinct gentes simply means that the female line of these families has died out, although male descendants may still exist in Hano.

It seems legitimate to conclude from the summaries which have been given that the inhabitants of Hano are only in part Tanoan in their consanguinity, although speaking a Tanoan tongue. They seem to be more closely allied to the Hopi than to the Tanoan people of the Rio Grande, although both have differentiated from a common ancestral stock.

The persistence of the language of their forefathers, notwithstanding the changes in their blood kinship, illustrates in a striking manner a liability to error in supposing in all cases that two peoples speaking the same tongue are necessarily more closely related racially than those which are linguistically different. It is believed that in some cases, as a result of the rigid adherence to the matriarchal law, language may survive after racial kinship has changed. These possibilities are of profound importance in speculations as to the kinship of the Hopi themselves, as I shall try to show in subsequent articles.

## THE ORIGIN OF SACRED NUMBERS.*

BY DANIEL G. BRINTON, M.D., LL.D., D.SC.

An investigation into the origin of sacred or holy numbers should exclude the consideration of numbers used in merely classificatory and conventional relations, as those which naturally flow from the quinary, decimal, duodecimal, and vigesimal systems of numeration; and also the cabalistic, occult or mystic employment of numbers, so common in the secret philosophies, as these were conscious fabrications or adaptations, in a social condition far removed from that of primitive thought.

Confining the study to holy or sacred numbers as observed in the early civilizations and among tribes living in what we call primitive conditions, where the culture status still bears a distinct ethnic character because largely indigenous and spontaneous, I have reached certain conclusions which, so far as I know, have not heretofore been stated, at least neither so fully nor so definitely, by any of the numerous writers on this subject.

I shall present these in categorical form and then proceed to defend them.

1. The sacred numbers are preëminently 3 and 4, or derived from these.

2. These numbers represent contrasting or antithetic symbolic notions, and arise from wholly opposite mental perceptions.

3. The number 3 derives its sacredness from abstract, subjective operations of the intelligence, and has its main application in the imaginary and non-phenomenal world.

4. The number 4 derives its sacredness from concrete and material relations, from external perceptions, and has its application in the objective and phenomenal world.

5. The associations which attach sacredness to these numbers arise in the human mind, of the same character, everywhere and

* Abstract of a paper read before the Oriental Club of Philadelphia, February, 1894.

at all times, so that no theory of borrowing is needed to explain identities or similarities in this respect.

6. Ethnic character, however, tends potently to develop especially either the one or the other, either the abstract symbolism of the 3 and its derivatives, or the concrete symbolism of the 4 and its derivatives; and, conversely, the preponderant development of the one or the other of these reveals, with instructive precision, the ethnic character of tribes and nations.

### *I. The "Three" Series.*

All operations of the mind, all acts of intelligence, necessarily proceed in accordance with the three fundamental laws of thought, expressed in logic as the laws of Identity, Diversity, and Excluded Middle. These ever-present laws, though obscurely recognized, constantly exert their power in impressing a triple form on reasoning. Witness the form of the syllogism, or the logic of Hegel with its two antitheses reconciled by a higher synthesis, or the trilogies of the philosophy of Auguste Comte.

When, as in the mathematical logic of Boole, the syllogism is expressed in algebraic terms it is found to be represented invariably by an equation of three members, to wit, $x = x \times x$, or $x = x^2$, a symbolic notation which proves the triune nature of all subjective operations of the intelligence.

The two universal categories of the understanding (or modes of perception), Space and Time, invariably present themselves in a threefold aspect: Time as the Past, the Present, the Future, as expressed in the grammar of every language; Space, as Length, Breadth, and Thickness; or, with reference to position, Above, Beneath, and Here. The primitive perceptions of matter are likewise threefold: as solid, the earth; fluid, the water; gaseous, the air or wind.

The applications of these conceptions in mythology are most marked.

Time, as the past, the present, and the future, is represented by the three Norns of Teutonic myth, Urdhr (die Gewordene), Verdhandi (die Werdende), and Skuld (die Kommensollende). The three Fates of the Greeks correspond to these.

As the effects of Time conceived under this threefold aspect, we have the mythical concept of the threefold energy of the

gods. For example, the Indian Trĭmurti, Brahma, creating; Vischnu, preserving; Siva, destroying; and the Egyptian triad, Isis, Horus, Osiris—birth, life, death. These are what the Vedas call "the three paths of Being." To this also we must attach the division of the year into three seasons, Spring, Summer, Winter, etc.

From the necessary threefold relation of Space and Position come such expressions as "Indra, Lord of the Three Worlds;" "Creator of the Three Worlds;" the "Threefold World," and the like; and in the Latin poets, "mundus triformis," "mundus triplex," "Jovis regnum triplex," etc.; also the division into the Upper World, the Under World, and the Earth Plane, which we find a primitive conception in every continent.

The Christian trinity will occur to all, as well as the trinities of Buddhism and many less important faiths. Indeed, we may almost agree with Mr. Westcott when he says: "It is impossible to study any single system of worship throughout the world without being struck with the peculiar persistence of the triple number in regard to divinity."

*The Nine.*—A development from the 3 is the 9—thrice 3. The 3 worlds, for instance, are again divided into three each, making 9, as we find in the nine worlds of Teutonic myth, in the cosmic notions of the Aztecs, in the "novem spheræ celestes" of the Latins, and in the *tridiva*, threefold heaven of Indra. The body in Sanscrit is called "the 9 mouthed" or "the 9 doored," from its nine openings, through which the soul goes in and out in its nine forms of ether or spirit.

*The Thirty-three.*—A further development is 33. Eternity, Aditi, Unendlichkeit, is said in the Vedas to have 33 sons. The gods who lived with Indra in the upper heavens were 33. They were the Maruts, the Winds, sons of Indra. The ancient Persians, in the Vendidad, reckoned the total number of divine beings at 33.

### *II. The "Four" Series.*

The sacredness of the number 4 is derived directly from the relations of the human body to the external world about it, as I showed years ago in "The Myths of the New World." To a man, standing, space is distributed in front and behind him, to his

right hand and to his left. The body itself is regarded as of four sides. The Persian Vendidad speaks of man as built "with four walls;" so the French say, "un homme carré" for a thick-built, strong man, and we speak of such an one as "square-built." Space being thus divided, the known world was spoken of as "the 4 quarters of the World," and the sunrise—that most important of events to man—marking one quarter, the others were counted from it, to give the 4 Cardinal Points. These were generally identified with the winds that came from them, regarded as gods, mighty powers, bringers of rain and fair weather, of heat and cold, of the life and death of vegetation; hence of the seasons, of fertility and of food.

Thus in ancient Rome Janus, the year god, was represented with four faces, "Janus quadriformis," and, as I have amply shown, throughout America the tribal mythologies, rites, ceremonies, beliefs, are constantly and profoundly governed and moulded by this sacred number. It was almost as prominent in many of the early nations of the Old World.

*The Seven.*—The sacredness of the number 7 is a direct development of the number 4, not a combination of the 4 and the 3, as might be imagined, nor yet independently suggested by external objects, as is generally supposed; such as the 7 planets, the constellation of the 7 stars, the 7 colors of the rainbow, etc. These were coincidences which doubtless strengthened its holiness, but that it originally arose from the four spatial relations is clear from its development in America and India.

These spatial relations are not exhausted by the four cardinal directions and the areas they embrace. That is horizontal space only; to be complete, we must add the three conceptions of vertical space, Above, Below, and Here. This gives the sacred 7, the type of completeness and perfection. To express this graphically on a plane surface requires a figure of 7 parts. Such a ceremonial diagram of the 7 "Ancient Spaces," or primeval cosmogonic areas, as understood by the Zuñi priests, has been shown by Cushing. It represents the North, South, East, and West, and the Zenith, Nadir, and Middle, thus exhausting the visible world. The observer is always supposed, wherever he is, to stand in the center of the middle space; there, in the sacred buildings planned in accordance with this view stood the altar;

there, in the distribution of the population, was located the house or town of the holiest and highest priesthood (as in the "7 cities of Cibola," and the "7 caves" of Aztec legend).

*The Thirteen.*—This was also a derivative from the four, and carried with it the like associations of ideas. I have explained it fully, after Cushing, in my "Native Calendar of Central America" It arises from the addition of the celestial to the terrestrial notion of space. Both are supposed to have the same seven spaces or areas, but the middle of each is at one and the same spot—there, where the individual himself is. This, therefore, is counted but once, and the number 13 results. The steps of this process are perfectly demonstrable, and that they were precisely the same among the Sanscrit-speaking Indians of India as among the Zuñi Indians of our own land the following sentence from one of Prof. A. F. Potts' learned articles shows:

> In the cosmogonical system of the natives of India, the earth consists of either 4, or 7, or 13 "islands," *dripa*, disposed around Mt. Meru as a center, like the petals of the lotus flower around its stamen. The central space or island is always India itself, regarded as the middle region of the earth, its navel, as were also esteemed by their own inhabitants, China, the Middle Kingdom; Delphi, the home of the oracle; Tibet, Jerusalem, and in America, Cuzco, etc.

This interesting extract is sufficient to prove conclusively not only the relationship of these three numbers, the 4, the 7, and the 13, but also that the process of their development one from the other was entirely parallel in the East and the West Indies. Our week of 7 days was simply a distribution of the time of a lunation as nearly equally as possible to the 4 quarters of the world, and to the gods or genii identified with them. Rather from such associations than from observation, must we explain the fact that many north Asiatic peoples and probably also the primitive Aryans counted 13 and not 12 lunar months to the solar year.

### *III. The Sacred Numbers as Ethnic Criteria.*

As the 4 and its derivatives sprang from and remained connected with terrestrial and material relations, while the 3 and its derivatives arose from psychical and subjective sources, the predominance of one series or the other in the mythological

symbolism of a nation becomes a criterion of its general tendencies, either toward a material or a spiritual life.

In the American and Mongolian races the 4 and its derivatives are almost exclusively the ruling holy numbers, whereas the numerous triads and trilogies of the white race, as represented by the Egyptians, Greeks, ancient Germans, Kelts, Slavs, and Aryan Indians, are familiar to all scholars, and have been pointed out in ample detail by Simrock, Potts, and a host of other writers.

The ancient Babylonians, whoever they were, seem to have had a decided preference for the 4 and its derivatives, and from them probably the early Semites drew the superior sacredness which, as we see in the Old Testament, they so pointedly assigned to that series. This profound ethnic contrast, original or derived, prevented them, when the religious sentiment reached a high development, from accepting the doctrine of the trinity, though as an abstraction of speculative thought, it is quite as elevated as the concept of unity. The latter is inconceivable except by the laws of identity, contrast, and exclusion, which forces it at once into a trilogy.

In some primitive nations both series were developed side by side, though rarely with equal vigor, while in the symbolism of most advanced cultures there is visible a blending of both, owing to borrowing and to the adoption of foreign ideas. Philosophers like Pythagoras and Heraclitus very early taught the mystic or occult powers of numbers, and this rapidly diverted their significance from their original intent in myth and art. To find what this was we must overlook all such later suggestion and go back, as I have endeavored to do in this paper, to man in his primitive condition and study the laws of his native psychical faculties and his unavoidable and universal physical environment.

## THE ALGONQUIAN TERMS PATAWOMEKE AND MASSAWOMEKE.

BY WILLIAM WALLACE TOOKER.

The significations attributed to many of the early Algonquian names of places or peoples, which have been retained in use from the first planting of the colonies until today, are in most instances totally at variance with the localities or subjects to which the names were originally applied by those who spoke the language. This anomalous state of affairs is due to the fact that the translator endeavored to find an etymology suitable to the present topographical features without trying to discover whether or not the name rightfully belonged there. Some are random conjectures, without a particle of traditional, historical, or etymological foundation; others are based on hypothetical deductions derived from foreign radicals. These last two are as persistent as any, in defiance of their evident false analysis, and will be quoted in historical works and essays until their true etymologies have been given and generally accepted.

Dr. J. Hammond Trumbull* has shown that Indian geographical names (and it will apply to others not geographical) after their adoption by the English, Dutch, and German colonists became unmeaning sounds or mere vocal designations, their primary significations being entirely obliterated by their transfer to an alien tongue. A mountain, for instance, takes the name of a lake; a tract of land, that of a hill; a swamp, the personal name of an Indian residing there; a spring of water, that of a forest; a river, that of a people, or *vice versa*. The Indian language tolerated no such mere marks; every name was descriptive of the spot or subject to which it was applied, and thus to an Indian understanding its identity was beyond question.

Some of these terms in local speech of the whites have for various reasons become abbreviated by the loss of some constituent. These are all problems of the most intricate description,

* Indian Names in Connecticut.

and their interpretations will always remain in doubt in case the original cluster-word has been lost or forgotten. Therefore it is absolutely essential for the proper resolution of synthesis by analysis of Indian nomenclature that the student should have at his disposal, for the purposes of comparison with various cognate dialects, the earliest utterances of the names as recorded by those who heard them spoken, together with the historical facts relating to the same which have been preserved.

The interest in Indian nomenclature increases every year. The true meanings of the terms are desired by the historian and by every one interested in the various branches of anthropology. The question, therefore, naturally arises, Is it possible by study and research to evolve an etymology from these names which shall be acceptable from every standpoint of comparison? I believe that the greater number of these terms can be translated much easier than the Maya hieroglyphs, or the petrographs of the Algonquian stock. Their translations corroborate the early historians most abundantly; they supply a solution to many unsettled questions and give us more reliable data for historical investigation.

Some of the names mentioned by Captain John Smith have been in constant use since his day, with but slight change in spelling. Nearly all of these belong to the Powhatan language, which was more closely related in its radical structure to that of the Indians of southern New England than to the language of the Delawares, who were geographically nearer. From this fact it can be easily seen that the works of Roger Williams, John Eliot, and Josiah Cotton, together with William Strachey's Virginia Dictionary, afford abundant and reliable means of interpreting the geographical names and tribal designations displayed on Smith's well-known map of Virginia, as well as those incidentally mentioned in his various works. When careful and intelligent comparison of these languages is made it is comparatively easy to find analogies in other dialects of the same stock. This cannot be done, however, without much preliminary study and without the aid of the work already accomplished by many patient Algonquian scholars. If their conclusions are correct, we have a very strong basis for our own deductions; if in error, we must learn where they have failed and endeavor to avoid similar lapses.

In this essay I propose to give the results of careful inquiry into the etymology of two Virginian names with the same terminations, but a different nominal theme. It is generally accepted and admitted that both of these names, viz., *Patawomekes* and *Massawomekes*, although applied to people of distinct linguistic stock, are undoubtedly of Algonquian derivation, and therefore need no argumentative discussion at the present moment.

Minute and studious scrutiny of Smith's works will fully convince the seeker after truth that the name *Patawomeke* (= *Potomac*) as applied to the river, although so bestowed on Smith's map and retained to this day, did not primarily belong there; neither does it always designate the name of a town, as supposed, but really, in its early orthography and grammatical structure, described the people themselves. The bestowal of the name on the river by Smith, as was the case with other names of rivers in Virginia, was not out of regard for the meaning hidden therein, but because it designated the largest tribal community living on the stream.

The location of their principal settlement or palisaded inclosure, of 1608 and some years after, was identified by Thomas Jefferson and quoted by Bozman,* who says: "This Indian town is said to have been on the spot where the Virginians subsequently laid out a town, which they called New Marlborough, on a peninsula in Stafford county, Virginia, formed by the Potomack river and a large creek called the Potomack creek." There can be no doubt as to the actual location of the village on the spot indicated; but for all our knowledge concerning the discovery of this people and their town we are indebted to Captain John Smith, who learned of their existence at the time he was held as a prisoner among the tribes who were encamped between the James and the Rappahannock. He remarks: "Hee [Powhatan] described also vpon the same Sea, a mighty Nation called *Pocoughtronack* [= *Bocootaw-anauks*, 'the fire nation' (Strachey), located to the northwest from the falls of the James river], a fierce nation that did eate men, and warred with the people of *Moyaoncer* and *Pataromerke*, Nations vpon the toppe of the heade of the Bay."†

* History of Maryland, vol. i, p. 118.

† Arber's Smith, p. 20.

It is evident, in fact we know, that many of Smith's statements in regard to the *Patawomekes* were not from personal observation, but were derived from letters or from relations by his contemporaries after his return to England. He says (page 52): "The river is inhabited on both sides. . . . Then [comes] *Patawomeke* with 160 able men;" but later (page 348) makes it more than 200, thus showing an increase of 40 men since his first information. This proves that in the number of its available warriors the tribe was the largest, most prominent and powerful on the river. Speaking of Captain Argall's trading with the natives, he says: "With a taste whereof he returned to Iames towne, from whence the Lord De-la-ware sent him to trade in the river of *Patawomecke*."* Henry Spelman, whom Smith calls one of the best interpreters in the land (once a prisoner among them, and rescued in September, 1610, by Captain Argall on the aforesaid voyage), in his relation of the event speaks of the king of *Patowomeck* as if it were a tribal name, and that he lived a year or more at a town of his called *Paspatanzie*. This may be another name, or the real one, for the town called *Patowomeck*. Spelman further observes: "When Capt: Argall ariued at a toune cald *Nacottawtanke*, but by our english cald *Camocacocke*, wher he understood that ther was an english boy named Harry. He desiringe to here further of me cam up the river which the Kinge of *Patomeck* hearringe sent me to him and I goinge backe agayne brought the kinge to y^e^ shipe."†

This was, no doubt, the first visit of the English traders to the river subsequent to Smith's second voyage of discovery, in 1608. At all events, we have no record of any in the interval. The town called *Nacottawtanke* by Spelman does not seem to have been the *Nacotchtanck* of Smith, for the reason that the latter was higher up the river and at the head of navigation. As the town was known to the English as *Camocacocke*, it was, perhaps, the same one called by Smith *Cecomo comaco* (="sachem's house"). Assuming this to be the case, we can more readily understand why Argall was obliged to go up the river to meet the king, which he could not have done had he been at *Nacotchtanck* (*Anacostia*).

* Arber, op. cit., 172, 503, 511.

† Arber's Smith, pp. ciii, civ.

My reason for believing that *Paspatanzie* was the real name for the town of the *Patawomekes* is in its translation, which describes the spot where Smith and Jefferson locate the village at the junction of the creek with the larger river, viz., *Pasp-*, "a bursting forth or flowing out;" *otan*, "a town;" *zie* (=Massachusetts: *es-et*) diminutive form of the locative affix "at" or "about" =*Pasp-otan-es-et*, "a town at the mouth of the stream." These extracts, together with my conclusions, are all links in the chain of evidence against the name *Patawomeke* having been a name of the town from the aboriginal point of view.

Among the various meanings ascribed to the name Potomac appear the following: Heckewelder informs us that the form of the name should be *Pedhamok*, meaning "they are coming by water, drawing near in crafts and canoes." This conjecture is very near, but it would much better apply, as will be noticed hereafter, to the *Massawomekes*. The Jesuit Father Jacker* declares that the word indicates "small fishes," and gives the general meaning as "the river full of swarms of small fry, where fishes spawn in shoals." Still another idea advanced is that the term meant "bushy, or brushy river." "River of Swans" is another. Webster's Dictionary, under the stated authority of Schoolcraft, Trumbull, and Ballard, gives it as "the burning pine, resembling a council fire." There may be others which I have overlooked, but here are evidently enough, such as they are, without making further conjectures. It is acknowledged by James Mooney, of the Bureau of Ethnology, who has devoted much study to Smith's works, and also by many students of Indian linguistics, that none of these are etymologically satisfactory or acceptable. I would not venture to suggest another interpretation unless sure of its true analysis.

In Arber's reprint the name occurs about forty times, with at least seven very slight orthographical variations, as *Pataromerkes*, *Patowomeck*, *Patawomeks*, *Patawomekes*, *Patomecks*, *Patowomekes*, *Pattawomekes*. The most common is the fourth variant. The first is, no doubt, a typographical error, while all appear in some instances without the anglicized plural. Taking any of these forms, which are nearly identical, as representing the true utterances of the native pronunciation and placing the accent

* Maryland Hist. Soc. Fund Pub., vol. 7.

on the penult, where it belongs, viz., *Patowómeke*, we have its true value, as nearly as it could be presented in English notation. Allowing this basis of study, and considering that the name was originally descriptive of the people, as I believe I have satisfactorily demonstrated, I will proceed to give its analysis.

In the first component, *Patow-* or *Pataw-*, we have a root with a characteristic termination or formative, in the inanimate object form, which represents the mitigation of the verbal energy of the simple transitive verb.* This verb is identical with the Powhatan,† *Patow*, "to bring agayne," that is, to continue bringing (something regularly or habitually). Analogous to the Massachusetts (Cotton) *Patau*, (Eliot) *Paudtow;* Narragansett (Williams), *Páutow;* Delaware (Zeisberger), *Peta*, "to bring in;" Cree (Howse), *Péytow*, "he brings it." This verbal, being a common one, can be found, in one form or another, in all Algonquian languages. (Cf. *Pitanoki: apporter le produit de sa chasse. Pitabose: apporter un echantillon de sa chasse.*‡

The second component has two elements, *óm* and *eke*, with the anglicized plural *s* sometimes added to the affix. This was frequently or invariably done by the English when speaking of the natives; therefore does not always appear rightly bestowed when added to a place-name; but in this instance, being a people, when the translation is made it is found to be correctly applied.

In giving the meaning of the penult *óm*, I cannot do better than to quote Dr. Trumbull's correct study of what is no doubt the same verbal, viz:

> The verb of simple motion—that which expressed merely the notion of going—was in the third person singular of the indicative present *ꝏm*, or, as Eliot wrote it (with the pronominal prefix of the third person), *wꝏm;* in the plural, *ꝏmwog*, "they go." In combination with other words denoting the direction, manner, or agency of going, Eliot writes *-ohham*, and *-hom* for the singular; as *pummohham*, he goes by sea; *nohham* or *nohhom*, he goes by sailing, he sails (*en nohhamun*, "to sail to," Acts xx, 16): *sohham* (=*soh-ꝏm*) he goes forth, &c. For *ꝏmwog*, Roger Williams writes in the Narragansett dialect *homwock*, "they go."⁋

* Howse: Cree Grammar, p. 36 et seq.; also Eliot's Bible.

† Strachey's Dictionary.

‡ Cuoq: Lexique de l'Algonquine.

⁋ Mass. Hist. Soc. Proc., 1866, p. 376.

In the Powhatan dialect the animate plural affix is *-eke* or *-uke*, although these are sometimes varied, corresponding to the *-ick* or *-ock* of the Narragansett, *-og* of the Massachusetts, and *-ek* of the Lenni Lenâpé. Thus we have our name, in accordance with Algonquian synthesis, *Patow-óm-eke*, "to bring again they go and come," "those who travel to bring again;" or, by a free translation, they were "traveling traders or peddlers" (of what?). Graphite or plumbago was highly valued and was an article of commerce among all the natives. Fragments bearing marks of aboriginal use are found in the western mounds, in the eastern shell-heaps, and scattered over the surface of village sites far removed from its original source of supply. Professor F. W. Putnam, in a letter dated June 26, 1882, admitted that its presence in shell-heaps was unknown to him until I called his attention to the fact. An Indian settlement near Sturbridge, Mass., derived its name* *Metewemesick*, "place of black earth," from the occurrence of the article.† The *Patow-óm-ekes* perhaps take their name (applied to them by neighboring Powhatan tribes, being the first to use it, according to Smith, page 20) from being owners of a similar mine and "peddlers" of this mineral, which Smith mistook for antimony. Smith says, and his statements are always to the point:

> The king of *Patawomeke* gaue vs guides to conduct vs vp a little riuer called *Quiough* [Aquia creek], vp which we rode as high as we could. Leauing the boate; with six shot and diuers Salvages, he marched seuen or eight myle before they came to the mine: leading his hostages in a small chaine they were to haue for their paines, being proud so richly to be adorned.
>
> The mine is a great Rocky mountaine like Antimony; wherein they digged a great hole with shells and hatchets: and hard by it, runneth a fayre brooke of Christal-like water, where they wash away the drosse and keepe the remainder, *which they put in little baggs and sell it all ouer the country to paint theire bodyes, faces, or Idols;* which makes them looke like Blackmores dusted over with siluer, With so much as we could carry we returned to our boate, kindly requiting this kinde king and all his kinde people.‡

Their village having been situated where "the river doth di-

*See R. Williams' Key, Narragansett Club edition, p. 207,

†See N. E. Notes and Queries, Newport, R. I., 1890, vol. i, p. 97.

‡Arber's Smith, pp. 418, 424.

vide it selfe into 3 or 4 convenient branches,"* made it very accessible to the canoes of the Red-men from every direction. The river was a well traveled waterway, had been for years, and continued so for years afterward, for the transportation of all products of both English and savage industry to the tribes north and west, as we have abundant evidence to prove from the perusal of Smith's works and the works of other early writers.

Smith's mine of graphite, the steatite and workshop quarries recently discovered and investigated,† bearing evidences of early labors in the shape of pot-forms, stone tools, and the consequent débris of manufacture, shows that all of these mines furnished material and utensils which were greatly desired by more remote tribes in whose country these minerals were not found. The Indians of the river were—as were in fact all the Algonquian tribes previous to the influx of settlers, who crowded them out of competition—more inclined to the peaceful pursuits of trade, manufacture, and agriculture than were their visitors, the warlike Massawomekes.

The first information Smith had of the Massawomekes—who are now known to have been a people of Iroquoian affinity, probably some of those afterward known as the "Eries," and not related in any way to the Algonquian tribes of Virginia—was during his first voyage of discovery. He tells us that when he entered the river of Kuskaranaoke (Nanticoke river, Maryland) the people there "much extolled a great nation called the *Massawomekes*."‡ This expression, "much extolled," shows that the natives living on this river were friendly and in close relations with this northern tribe, who visited them for the purpose of bartering their furs for the "white beads they made," as the name *Kuskaranaoke* denotes.§ In construing Smith's statement, it will be noticed that I differ wholly from Bozman,‖ for he does not think "much extolled" implies alliance.

* *Ibid.*, p. 348.

† W. H. Holmes: Quarry Workshop. Am. Anthropologist, vol. iii, pp. 1–16; Ancient Soapstone Quarry, *ibid.*, vol. iii, pp. 321–330.

‡ Arber's Smith, p. 111.

§ *Ibid.*, pp. 415, 418.

‖ History of Maryland, vol. i, p. 112.

My friend, Dr. A. S. Gatschet, in his essay on the Massawomekes,* says:

> The Patawomekes or Poto'maks coincides in its termination so closely with that of the Massawomekes that we can assume the same origin for both. In the majority of the Algonkin languages a term like *Massa* means "large," "great," and *-ek* is either the locative ending *-ik, -k, -q,* or more probably the suffix of the anim. plural, *-gi, -ki,* occurring, *e. g.*, Shawnee; *ome* is supposed by A. L. Guss, Esq., to mean lake or water.

Dr. Gatschet accepts Heckewelder's translation of Patawomeke, "we have come by water," and gives that of the Massawomekes, "those on a great water." I agree with this noted philologist that the terminations of the two are identical, but differ entirely from his conclusions as to their significations. He may not agree with it at the present moment. The publication of Arber's Smith since he wrote his essay has solved many vexatious problems; therefore our light of the present is better than was his of the past.

It is impossible to evolve the radical *-pe* or *-mp*, "water," which is characteristic in the Powhatan, as well as in all Algonquian languages, from either name. The definition of *-ome* as "lake" or "water" by Mr. Guss is merely a supposition which will not stand the light of critical analysis. The prefix *Massa*, frequently in many dialects of the family, means "great;" but in this instance I cannot believe it has that meaning, for the reason that *maco* or *macha* is the Powhatan equivalent found in *Maco comaco*, a town on the Patuxent river,† and in *Macha comocko*, "house of the town," on the Chickahominy river.‡ Both of these have been translated by Strachey § and by Dr. Trumbull || as "great house." Accordingly, by placing the accent on the penult and hyphenizing the name as in the previous study, we have *Massaw-ómekes* or *Massow-ómekes*, exhibiting Smith's two variants of its main component. This synthesis presents to view something different to be analyzed and proves conclusively to my mind that *Massaw* or *Massow* is the cognate of the Massachusetts (Eliot), *Mush ɔn* or *Mish ɔn* (Cotton), *Musshóan;* Montauk (Gardiner),

* Am. Antiquarian, vol. iii, p. 321.
* Smith's Map.
† Smith, p. 538.
‡ Am. Anthropologist, vol. vi, p. 57.
§ Hist. Mag., No. 1, vol. 7, p. 47.

*Mashuèe;* Pequot (Stiles), *Meshwe*, "a canoe." In confirmation of this presentation, Strachey's Dictionary has *uppoushun Mushower*, "the shipps go home;" literally, "they go over, the boats do;" also *Massow-uxac*, "a ship;" literally, "boat of the strangers;" *uxac* (= *onnux* (New England), *wunnux* (Montauk), "white men or strangers"), thus making, with its constituents, *Massow-ómeke*, "those who go and come by boat," the parallel of the Narragansett (Williams) *Mish ꝏnhomwock*, "they go and come by water—*i. e.*, by boat." The same name in a variety of forms, but with a localizing affix, occurs in many places throughout New England, applied to necks or points of land where it was convenient for crossing to another place in a boat; in other words, a ferry. Those which are least altered in form are *Mushauwomuk*, the name for Boston, describing the ferry to Charlestown;* *Mishawomet*, a neck of land in Warwick, R. I.;† *Meshomac* or *Mashomuk*, neck on the southern point of Shelter island, N. Y., opposite Sag Harbor, where they formerly crossed in order to go to Montauk or to Three Mile Harbor.‡ The ferry for the past 150 years has been farther to the northwest, between Shelter island and North Haven.

It has been erroneously stated that Smith gave the meaning as "those on a great water." What Smith really did say was this: "Many descriptions and discourses they made vs, of *Atquanachuck*, *Massawomek*, and other people, signifying they inhabit vpon a great water beyond the mountaines."§ Here he applies the term "people" to both of these names; and his "signifying" is evidently used here in the sense "they made known by signs," as applied to *Atquanachuck* = "those beyond or at the end of the mountains," and to the *Massawomeks*, "those that travel by boat." One people being located on the tidewater of Delaware bay or river and the other on the "Great Lakes" shows that Smith's statement "that they inhabit vpon a great water beyond the mountaines" really applied to both people.‖

Smith's valuable and interesting recitals are strongly corroborative of this study, viz: "Seaven boats full of these *Massaw-*

* Mass. Hist. Soc. Proc., 1866, p. 376.
† Parsons' Indian Names in R. I.
‡ See U. S. Coast Survey map.
§ Arber's Smith, p. 423.
‖ See Smith's Map.

*omeks* the discouerers encountred at the head of the Bay; . . . they much exceeded them of our parts: and their dexteritie in their small boats made of the barkes of trees sowed with barke, and well luted with gumme, argueth that they are seated vpon some great water"* Again he says: "From thence returning we met 7 Canowes of the *Massowomeks*."† Mosco, an Indian of *Wighcocomaco*,‡ in interpreting one of the *Hassiningas* (=those that live in caves or rock-shelters), whom Smith and companions captured, said: "The *Massawomeks* did dwell vpon a great water, and had many boats, and so many men that they made warre with all the world."§ Captain Henry Spelman relates: "Beinge in the cuntry of the Patomecke the peopel of Masomeck weare brought thether in Canoes which is a kind of Boate they haue made in the forme of an Hoggs trowgh But sumwhat more hollowed in."|| Captain Henry Fleet,¶ in his conference with the *Massawomekes* on the 13th of June, 1632, writes: "Divers were the imaginations that I did conceive about this discovery and understanding that the river was not for shipping where the people were [where the Massawomekes lived] not yet for boats, but for canoes only I found all my neighboring Indians [Anacostias] to be against my design [of visiting the Massawomekes] the Pascatowies having had great slaughter formerly by them to the number of one thousand persons in my time. They coming in their birchen canoes did seek to withstand me from having trade with the other Indians." It will be observed that Smith and Spelman differ in their descriptions of the boats used. The probability is both were right, and that the term did not always designate the same people; for, indeed, all those who happened to come by boat from the north and west would be described alike by the Virginians with whom they came in contact. It is evident that some of the people called the Massawóm-ekes used the bark canoe, while others used the wooden dugout. This can be observed on the great lakes today. Roger Williams informs us that the *Mish oon* was a boat made

* Arber's Smith, p. 72.
† *Ibid.*, p. 349.
‡ *Ibid.*, p. 424.
§ *Ibid.*, p. 428.
|| *Ibid.*, p. cxiv.
¶ Neill's Founders of Maryland, Albany, 1876.

of a pine, oak, or chestnut tree hollowed out by burning and scraping. The root, which has a formative affix, seems to have been primarily from *mish*, "wood," "stock," or "trunk of a tree," as in the Narragansett *Wompi-mish*, "chestnut tree;" literally, "white-wood;" *Paugáute-mish*, "oak tree;" Massachusetts (Eliot), *Nœti-mish*, "oak tree." These two latter mean literally "fire-wood." From descriptions by the early writers the dug-out was the only kind of a boat made or used by the Virginians. Strachey gives several other terms for boat from various roots.

This concludes my demonstration, the most remarkable circumstance in connection with which is that the main components are found in Strachey, where they have been overlooked by all who have endeavored to translate the terms. This fact, together with the terminations agreeing so well with their nominal themes, gives us an analysis which seemingly is absolutely unquestionable.

NOTE 1.—*Bocootaw*, "fire" [Strachey]; *-anauk*, "nation" or "people." "Those people whom Powhatan calls the *Bocootawwonauks*, who [he saith] doe likewize melt copper and other mettalls" (Strachey, p. 27). This would seem to identify these people with the *Assistagué-eronnons* of Champlain, which in the Huron tongue means "Fire nation." On Champlain's map of 1632 they are placed south of Lake Erie. Charlevoix (Tome I, p. 447) mentions a tribe under the name of *Mascoutin*, or "Nation of fire," who were then located still farther west (Doc. His. N. Y., vol. 3, p. 23). A mistake made by many scholars has been the endeavor to identify the terminal *-anauk*, of this name, and *-anough* or *anock*, of *Sasquesah-anough* (see Amer. Antiquarian, vol. 15, pp. 286–291), with the Delaware *-hanna*, "a river." When this hypothesis is ignored entirely, as it should be, as far as all of the names of Captain John Smith and Wm. Strachey, which have this termination, are concerned, and the interpretation of "nation" or "people" applied, making these elements the cognate of the Massachusetts and Narragansett *añeuck*, "people," it brings truth out of chaos, is not only strongly confirmed by Smith, but makes his history far more satisfactory and interesting. Comparison of the early Virginian names with the modern Delaware alone will cause failure in every instance.

NOTE 2.—*Hassiningas* or *Hassinungas* (= Massachusetts (Eliot) *hassunnegk*, "cave," Gen., 23: 9, 17; *hassunonoggut*, "holes of the rocks," Jer., 16: 16) from *hassun*, "rock;" *wonogk* or *wonoggut*, "den," "cave," or "hole" (Job, 38: 40).

## NEW WORDS IN THE KOOTENAY LANGUAGE.*

BY A. F. CHAMBERLAIN.

Speaking of the Eskimo, Mr. John Murdoch says:

In the Eskimo language there are two methods of providing a name for anything new. One is to form a derivative expressing some characteristic of the object from one of the established "stem-words" of the language by the aid of one or more of the recognized affixes. The other is to adopt the name by which they hear the object called by those strangers through whom they become acquainted with it. Such a thing as inventing a new "stem-word" to express a new idea appears to be entirely opposed to the spirit of the language.†

There are, of course, in some tongues the simple transference of meaning, widening of signification, resurrection of an almost forgotten word, and the like, which may all finally be placed under Mr. Murdoch's first class. In this brief essay the writer discusses the names for "things new" in the Kootenay language of southeastern British Columbia, on the study of which he has been engaged for the last two years.‡

### 1. Words relating to Religion.

*God.* The word now used by the Kootenay Indians to express the idea "*God*" is Yä'kasinki'nāwa'skī, or, as it is sometimes also pronounced, yäkä'sinki'nāwa'skī, said by some to signify "*he who made us.*" This name, probably due to missionary influence,

* The Kutenay or Kootenay language is spoken by about 1,000 Indians, of whom 400 live in southeastern British Columbia and the remainder principally in Idaho and Montana. Their aboriginal name should be pronounced Ki-to-na'-χa. The Kutenay have the reputation of being honest and industrious, and never engage in strife with the neighboring whites. They form distinct linguistic stock. The language, which is largely polysynthetic, has been thoroughly studied only by Dr. Franz Boas and Dr. Chamberlain.—A. S. Gatschet.

† American Anthropologist, vol. i, p. 331.

‡ The alphabet here used is the same as that employed by the writer in Report British Assoc. Adv. Sci., 1892.

seems to contain kin (= *with the hand*), āwas (= *he . . . . us*), yä . . . . kē (= *the one that, he who*?). But the analysis is somewhat doubtful. Compare, however: g·ā′tlāka′sinnī′tla?= *Whose house is it?* Yā′kāk·ā′kē = *the same as.* In very colloquial language the expression nāsū′kwēn (*chief*) nā′ɬtā (*on high*), modeled after the sā′qalīta′iī of the Chinook jargon, is in use, with which compare the Kāti′tōnā′tlā (*Our Father*) nā′ɬtā (*on high*), the beginning of De Smet's rendering of the Paternoster into Kootenay. In their uncivilized state it is probable that the Coyote and the Chicken-Hawk were the nearest approaches to divinity present to their minds.

*Priest, clergyman, missionary.* The missionaries of the Roman Catholic church, and hence all others, are termed kā′mk·ōk·ō′-kōtl āqkā′tūwū′mtlāɬ, literally *black shirt.* Compare the ma′katē wikonaietc, *the black-robed*, of the Nipissing Algonquians.

*Church.* The word given by several Indians was tsqāmā′tlnē, properly a verbal expression, meaning *there is talking together; they talk together;* from tsqā′näm (*to talk*), -mātl- (*together*), -nē (verbal suffix).

*Mass.* Related to the preceding is the word for *mass*, gūwi′tlk·ā tsqāmā′tlētl = *the big talking together;* gūwi′tlk·ā = *big, great.*

*Holiday, feast-day.* Simply *great day*, gūwi′tlk·ā kīyū′kwīyē′t.

*Days of the week. Sunday*, gōkwē′tcin mēyēt, probably *the one day* (*i. e.*, great day); *Monday* (tlā) ō′kwēn mēyēt = "(*and*) *one day*" (*i. e.*, the day after Sunday), and so on through the week.

*Communion.* "*I partake of the consecrated bread*" is hō′(wi)tsāk-tō′kōwā′kinikteі′tlnē.

*Crucifix.* The word employed by several Indians was k'tcik'-mā′tlinqō′nē, a verbal expression, evidently related to gōtstcі′kɛ-mā′tlinwі′tstlāɬ, "*to fold my arms.*"

*Rosary.* The word in use seems to be k'kā′qō, which is of doubtful etymology.

The French *Jésus Christ* has been metamorphosed to suit the genius of the language into Cī′cētlē or Cī′cēklē, and the "being in heaven, called Ciciklē," of the Nootkas, referred to by Dr. Boas,* is doubtless an Indian disguise of the same. With the Kootenay the Virgin Mary is simply Mā′is (*his-mother*) Cī′cēklē.

*Heaven.* "*Sky*," in Kootenay, is ā′qkitlmē′yēt, and is used by

*Sixth Rep. on Northwest Tribes of Canada, p. 43.

Father Coccolo in his rendering of the Paternoster for our "*heaven.*" De Smet, in his version, uses naitte (properly nā′ɛtā, "*on high*"), for "*in heaven.*" In very colloquial language nā′ɛtā ämāk, the equivalent of the Chinook jargon sā′qalī i′lahī, "*sky country,*" is sometimes used.

2. Names of Quadrupeds, the Knowledge of which has come to the Indians through the Whites, or by way of Other Tribes.

*Cat.* The word pūs comes into Kootenay either directly from the whites or through the Chinook jargon. I have, however, never heard the word reduplicated—pūspūs, as it sometimes is in that lingo. A "*kitten*" is pūs nā′nā (*small*).

*Cattle, Cow, etc.* The general term for "*cattle*" is k'ā′nūktlū′k·tlē īā′mō, which seems to signify "*variegated horned animals*" (ū′k·tlē = *horn;* īā′mō = *animal*). For *cow* and *bull*, the words tlū′k'pū and ni′tltsik, signifying originally *female buffalo, male buffalo*, are used. A *calf* is ā′qkinkō′mātl. A *steer* is k·ā′gūtlā′ts (*castrated*), from k·ā, *no, without*, ā′qkūtlā′ts, *testicles.*

*Dog.* The word for "*dog,*" qā′ɛtltsin, has a somewhat foreign aspect, as we find in Kalispelm hetltchin, "*dog,*" and in Piskwaŭs hātltchin, "*horse;*" hehetlchin, "*dog.*" See *Horse.*

*Hog.* The word gy′inūk·tsā′tlā, by which this animal is known, has reference to the nose of the creature, the chief component being ūk·tsātlā = "*nose, nostrils.*" The "*cut-off*" appearance which the nose of the pig presents probably accounts for the name.

*Horse.* The name k'k'ā′tlāqā′ɛtltsin, as the Lower Kootenay form, g·idlkā′dlāqā′ɛdltsin, more clearly shows, signifies "*elk-dog,*" the word for "*elk*" being in Upper Kootenay g'itlk'ā′tlē, Lower Kootenay g·idlk'ā′dlē.

*Mouse.* The name ntsōk, ntcūk, is transferred from the "*field-mouse.*"

*Mule.* The word gū′witlk·ū′āt literally signifies "*big ear,*" from gūwitl (*big*), k·ū′āt (*ear*).

*Rat.* One name is gūwi′tlk·ā ntsōk, "*big mouse.*"

*Sheep.* The domestic sheep is called sūyä′pī ni′tlyäp, or, when no ambiguity can arise, simply ni′tlyäp, in the case of the female; gū′witlk·tlē (*i. e.,* "*big horn*"), in the case of the male, names applied originally to the "Big Horn" mountain sheep. Sūyä′pi

ni'tlyāp signifies "*white man's sheep.*" In like manner the name gī'ānū'kqō, *goat*, properly belonging to the "*mountain-goat.*"

*Camel.** The name k·ānū'k·tlā is of doubtful etymology. Compare ā'qkō'ktlā'nam, "*skin.*"

*Crocodile.** The name k'ī'tlkē is of doubtful etymology.

*Elephant.** The name gō'ōk·tsā'tlā may mean "*tail-nose.*" Compare gōō'ktlām ("*tail-head*")= Chinaman.

*Gorilla, monkey.** The name k'tcēkā'tē seems "*the searcher, the one that looks for;*" hō'tcēkā'tē = *I look for.* Compare the appellation of the "*monkey,*" in Otci'pwē, "*louse hunter.*"

*Leopard.** The name kā'ātlkā'q'mi'tlqā. Compare the word for a species of salmon kāqkā'tlkiskō'q'mā'tlā, both of which seem to have reference to the "*spotted skin.*"

*Lion.** The name k'tsEmā'k·Ek·ā signifies "*the strong one.*"

*Rhinoceros.** The word kī'ānū'k·tlē has reference to the "*horn*" (ū'k·tlē). See "*Cattle.*"

*Tiger.** The name kā'qtliqōwā'Et is of doubtful etymology.

*Zebra.** The word gāk'tlēskō'āk has reference to the "*stripes.*" Compare gāktlē'tl k'kō'ktcī, "*candy,*" literally "*variegated (striped) sugar.*"

### 3. Names of Birds.

*Duck.* The domestic duck is called kā'nkūsk·ō'ikāk ("*red leg*"), a name originally belonging to the wild mallard.

*Hen.* The general name for this domestic fowl is gūtskā'kōminū'k'mā'Enām, qualified by the words stō'kwātl (*female*), and kE'skō (*male*) when necessary. The name has reference to the prominent tail (ā'qkinū'k'mā'Enām) of the bird. Other names are gāktlē'tlinū'k'mā'Enām, "*spotted, variegated tail;*" gūtsi'tlinū'k'mā'Enām, probably "*prominent tail.*"

*Peacock.* The name gū'witlinū'k·ōmā'Enām signifies "*large tail.*"

*Turkey.* The word gōwi'tlk·ā t'ā'nkūts signifies "*big grouse.*" T'ā'nkūts is the term applied to the "*ruffled grouse.*"

*Buzzard.** The name kā'spāq'wa'kāk, according to the Indian who gave it, refers to what he called the "*whiskers*" of the bird.

*Dodo.** The name kānmū'qkōn was explained as having refer-

* Words marked with an asterisk were applied to pictures of the creatures in question in a book shown to the Indians by the writer, and a number of them are doubtless extemporaneous.

ence to the "*beak*" (āqkū'nkāk) or "*nose*" (āqkū'nām; radical is kūn or kōn) of the bird.

*Goat-sucker* (Caprimulgus vulg.).* The name gō'inū'k·ōmā'ɛnām has reference to the bird's tail.

*Rhinoceros Hornbill* (Buceros v.).* The name tsānkū'mkak refers to the "*beak*" of the bird. See the word for the "*Dodo.*"

*Lyre-bird.** The name kīsū'kinū'k·ōmā'ɛnām signifies "*it has a good* (sūk) *or beautiful tail.*"

*Ostrich.** The name kūō'kāk is of doubtful etymology. Compare, however, āqkō'ōkā'kɛnām, "*neck.*"

### 4. Names of Fish.

*Whale.* The name gūwi'tlk·ā gīā'kqō signifies "*large fish.*"

*Bass.** The name kai is of doubtful etymology.

*Blind-fish.** The name k'ū'mē is that by which the "*sucker*" of British Columbian waters is known.

*Perch.** The name kā'ɋātli'ɋtlōp contains the word for "*fin*" (āqktlū'p). See the word for *Leopard.*

*Pike.** The name kīā'ɋtlākū'nkāk refers to the "*snout*" (*nose, beak*) of the fish. See the word for "*Dodo.*"

### 5. Crustaceæ, Insects.

*Water Beetle.** The name kāɋā'tlinmō'kwā.

*Centipede.** The word tlitlkō'nākē'tlmāk' is related to the term for "*chair,*" kākōnākē'tlmāk, and has reference to the "*arms* (āqkō'nākē'tlmāk') *and legs*" of the creature.

*Lobster.** The name gī'ānā'tlākō'nākētlmā'k is closely related to the word immediately preceding; the word for "*crab,*" "*crawfish,*" tsū'mīāɋ is entirely different.

### 6. Plants, Vegetables, Fruits.

*Anemone multifida.* The name sūyā'pī ā'qkis, "*white man his arrow* (*cartridge*)" is significant.

*Apple.* The word gō'tlwā, which is properly applied to the "*hips*" of the "*wild rose*" (*Rosa pisocarpa*) is now used also for "*apricot, peach, pear, tomato,*" and all similar fruits. An "*orange*" is gūwī'tk·ā gōtlwā, "*big rose-hip.*" Curiously enough an "*apple-tree*" is not gōtlwāwōk (*rose-bush*), as might be supposed, but gō'tlwā ā'qkwōkwā'ēs.

*Bean.* The word tsä'm'nā is applied to the "*coffee bean*" as well as to the ordinary garden bean. Compare the homonym tsä'm'nā, "*wood tick.*"

*Beet.* The name ki'tɛnūs kō'ktcik'nāhā'tkā was explained by one Indian as signifying "*root, the color of urine, growing from the earth.*" The chief components, however, seem to be ki'tɛnūs (*cf.* kitɛnū'stik, "*to paint red*"), and k'kō'ktcī, "*sweet.*"

*Cabbage.* The name kē'kō'ktla'kpē'kā'tl probably signifies "*edible leaf-plant,*" from ēk (*eat*), ā'qkōtlākpē'k (*leaf*), -ātl, a suffix frequent in plant names.

*Carrot.* The name kānō'hōs nits'nā signifies "*white nits'nā.*" What nits'nā signifies is not apparent.

*Corn* (*Maize*). The name gātstlā'tlmāk is probably the same as gūtstlā'tlmāk, the term applied to the *Lupinus argentatus.* An "*ear*" of corn is called also āqkō'patl, a name which seems originally to have denoted the "*cone*" of the tamarack, etc.

*Cucumber.* The word gā'kākōmā'qā is of doubtful etymology. Another term for "*cucumber*" is yū'k'nōg·ō'ik·ā, said by the Indians to signify "*plant that grows on the ground wild.*" The same name is given to melons, squashes, etc.

*Lettuce.* The same word as that for "*cabbage*" (*q. v.*) is used.

*Oats.* The name k'k'ā'tlāqā'ɛtltsin kī'ēk means "*horse's food.*" The Otci'pwē papā'djikōkō'cimī'djin has the like meaning.

*Onion.* The name āqk·ō'ātl is the same as that for the *Allium cernuum*, the "*wild onion*" of the plains.

*Parsnip.* The name kämnū'qtlū ni'tsɛnā, "*white* nitsɛna."

*Peach, Pear.* The name gō'tlwā signifies literally "*rose-hip.*" See *Apple.*

*Peas.* The name given to "*peas*" *in or out of the pod*, or "*canned peas,*" is āqk nā'nā. This word means also "*shot,*" and "*peas*" are named from the resemblance. Aqk nā'nā is a diminutive of āqk, "*cartridge, bullet*" (primitively "*arrow*"). "*Split peas*" are called k'k·ā'nkō quā'tkqā.

*Pepper.* The name ā'qkōkplū'tlātl invites comparison with ā'qkōktlū'tlātl, *Juniperus communis.*

*Plum.* For the name gō'tlwā, see *Apple.* Another word for "*plum*" is āqkē"itlmāk'—a term originally applied to the "*choke-cherry*"—fruit of *Prunus demissa.*

*Potato.* The original significance of the name wā'ɛtā is unknown. The "Hudson's Bay potatoes" or "lady's fingers" are

termed kämnū′qtlū wā′ɛtā ("*white potatoes*"). The "*eye*" of the potato is ā′qkītlā′tlāqā′nām.

*Squash.* For the name gyū′k'nō k·ō′īyā′kā, see *Cucumber.*

*Sunflower.* The word kākā′dlimō′kōwādlī′dlyit was coined on the spot by a Lower Kootenay woman. It invites comparison with nākā′dlimū′k'nādlī′dlēk ("*it lightens, lightning*"), the radical of which is seen in āqkā′dlimūkōwā′ɛt, "*light.*"

*Turnip.* The name āqktlɛ′mātlu′kɛnām is of doubtful etymology.

*Wheat.* The name ā′qkinkū′tlātl or ā′qkinkō′ātlātl is also of doubtful etymology.

## THE LAWS OF SPAIN IN THEIR APPLICATION TO THE AMERICAN INDIANS.

BY JOHN G. BOURKE, CAPTAIN THIRD CAVALRY, U. S. A.

Probably no portion of American colonial history has been more neglected than that which relates to Spanish domination. It has been represented and believed by many that the unvarying characteristic of Castilian contact with the aborigine was blood-thirsty cruelty and a bigoted oppression, or at best a sublime indifference to the necessities, rights, and aspirations of the conquered. It cannot be denied that for believing all this there have been most excellent grounds since the incoming tide of Spanish civilization bore upon its crest a flotsam and jetsam of brutal, illiterate humanity, which despised every restraint of law and was bound together only by the attraction of a common greed.

But, so far as the enactment of wise laws could bring about such a result, it may be stated broadly that the Spanish Crown, from the very first days of the Discovery, seems to have aimed at the elevation, civilization, and Christianization of its new subjects. How far these laws were made inoperative by the inertness or rascality of minor officials would be a subject scarcely admitting of discussion in this paper, which merely presents the synopsis of each law and leaves untouched any extended criticism upon its efficacy or mode of operation. All nations, our own included, have passed laws which have gradually been allowed to fall into disuse or been openly abrogated.

The code in question has been taken very carefully from an interesting work* which was lent to me by my friend Colonel Jorge Green, special commissioner from Mexico to the Columbian Exposition. A synopsis only of each law is given in English, but it is believed that scholars interested in a more extended study of the subject will find all the assistance needed in the

* "Recopilacion de Leyes de los Reynos de las Indias," published in Madrid, in 1681, by Julian de Páredes, 4 vols., 8°.

numerous titles, books, and chapters appended, as well as in the name of the particular sovereign enacting the law, which in nearly every case is given.

The Spaniards found themselves confronted by a problem which involved the destruction or the gradual assimilation and amalgamation of large populations, generally sedentary, tenacious of old usages, superstitious to a degree, and suspicious of all strangers.

The Spaniard, to his lasting honor be it said, accepted the alternative of assimilation, and, although he sometimes faltered in his high purpose and was often guilty of cruelty, oppression, and the rankest injustice, yet he has left upon the American continent solid communities of aborigines whose social and moral condition has been most appreciably improved by the introduction of horses, cattle, sheep, goats, hogs, and chickens, the planting of orchards of peaches, oranges, and other fruits, as well as vineyards, and instruction in such new trades as carpentry, saddlery, blacksmithing, and wagon-making, or the improvement of such prehistoric handicrafts as stone-masonry, weaving, basket-making, and pottery.

The keynote of the Spanish regulative system, in this connection, may be found in the last will and testament of Queen Isabella, signed by her at Medina del Campo the day previous to her death, in 1504, and on exhibition among other historical treasures at the monastery of "La Rabida," in the Columbian Exposition at Chicago. It reads thus:

Quando nos fueron concedidas por la Santa Sede Apostolica las Islas, y Tierrafirme de el Mar Océano, descubiertas, y por descubrir, nuestra principal intencion fué al tiempo qae lo suplicamos al Papa Alexandro Sexto de buena memoria, que nos hizo la dicha concession, de procurar, inducir, y traer los Pueblos de ellas, y los convertir à nuestra Santa Fé Catolica, y enviar à las dichas Islas, y Tierrafirme, Prelados, y Religiosos, Clérigos, y otras personas doctas, y temorosos de Dios, para instruìr los vecinos, y moradores de ellas à la Santa Fé Catolica, y los doctrinar y enseñar buenas costumbres, y poner en ello la diligencia debida, segun mas largamente en las letras de la dicha concession se contiene. Suplìco al Rey, mi Señor muy afectuosamente, y encargo, y mando á la Princesa mi hija, y al Principe su marido, que assi lo hagan, y cumplan, y que este sea su principal fin, y en ello pongan mucha diligencia, y no consientan, ni dén lugar à que los Indios vecinos, y moradores de las dichas Islas, y Tierrafirme, ganados, y por ganar, reciban agravio alguno en sus personas, y bienes: mas manden,

que sean bien, y justamente tratados, y si algun agravio han recebido, lo remedien, y provean de manera, que no se exceda cosa alguna lo que por las letras apostolicas de la dicha concession nos es inyungido, y mandado. (Law 1, titulo 10, lib. 6.)

Following is the English translation:

"When we had conceded to us by the holy Apostolic See the islands and the terra firma of the ocean sea, discovered or to be discovered, our principal intention was, at the time, that we besought the said concession from Pope Alexander VI, of good memory, to gather and bring together and prevail upon the people of said islands and main land, and convert them to our holy Catholic faith, and to send to them prelates and religious clerics and other persons learned in the faith and possessed of the fear of God, in order that they might instruct the said inhabitants in the holy Catholic faith and indoctrinate and introduce good customs among them and better modes of life, as has been more fully set forth in the text of said concession; therefore I most affectionately beseech my Lord, the King, and I charge and command the princess, my daughter, and the prince, her husband, that they shall make it their principal object diligently to execute and carry out this my will, and that they neither consent nor allow any of the Indians native of or residing in said isles and main land to receive any harm whatever, either in person or property, but that they command them to be well and justly treated; and if they have received any injury, that they remedy it and so provide that in no manner shall the precepts enjoined and commanded in the apostolic letters of said concession be neglected."

The laws now following are not inserted chronologically, but rather by subjects, although, generally speaking, they begin with the Emperor Charles V, who quotes the terms of the above will as the fundamental principle of all Spanish Indian legislation:

All officials, ecclesiastical as well as military, were enjoined to do all in their power to carry out the purpose of these beneficent laws. Law 1, Emperor Charles V.

The Indians were to be allowed to marry freely. Law 2.

But Indians were not to marry before attaining legitimate age. Law 3.

Punishment was decreed against Indian men or women who married more than one wife or husband. Law 4.

This provision applied equally to infidel as to Christianized Indians. Law 5.

No Indian could sell his daughter, in matrimony or otherwise. Law 6.

Indians should marry in their own villages, except in the case of widows, who could return to the village of their birth. Law 7.

An Indian woman having children by a Spaniard could change domicile with him. Law 8.

Indians should not be separated from their fathers or relatives. Law 9.

The children of married women should be considered as belonging to the village of the father; those of unmarried women, to the mother's village. Law 10.

Indians should be allowed to have their children brought up in trades and other useful occupations without hindrance from anybody. Law 11.

Indians living in peace should be allowed to go freely from place to place. Law 12.

Indians should not be transported from hot lands to "tierra fria" or the reverse. Law 13.

Indians should not be carried off to Spain. Law 14.

Indians who had been smuggled into Spain should be returned to the New World at the cost of the Crown when the name of the man who had brought them across the sea could not be discovered. Law 15.

Schools for the instruction of the aborigines in the Castilian language should be established in each village without delay. This law was passed by the Emperor Charles V as early as 1550.

The Emperor Charles V, in 1551, established the Universities of Lima and Mexico, whose graduates were to enjoy the same privileges as the graduates of Salamanca (Law 1, libro 1, titulo 22). These universities were established "Para servir á Dios, nuestro Señor, y bien publico de nuestros Reynos conviene que nuestros Vasalles, subditos y naturales tengan en ellos Universidades y estudios generales." Other universities were established at a much later date by Philip IV in the cities of Santo

Domingo, Santa Fé de Bogota, Santiago de Guatemala, Santiago de Chile, and Manila de Filipinas. *Idem.*

But Charles V had done more than this; he had previously founded, or rather accepted the foundation of, the Franciscan University or College of Tzintzontin, on Lake Patzcuaro, in Michoacan. This college was established prior to 1543, and by 1581, as I have shown in a previous article in the AMERICAN ANTHROPOLOGIST,* had become the great university whose ruins are among the most impressive on our continent. In one of the four churches belonging to this ruined university still hangs one of Titian's masterpieces, "The Entombment of Christ."

Ley XII. "Declaramos, que pertenecen à nuestro Patronazgo Real el Colegio de Españoles, Mestizos è Indios, para que estudien Gramatica, y el Hospital de pobres enfermos de la Ciudad de Mechoacàn de la Nueva España, y aceptamos la cession, que en nuestra Real Corona hizo el Fundador, porque los Estudiantes y pobres sean mas bien favorecidos, y administrados." Charles V, Barcelona, May 1, 1543, in lib. 1, tit. 23.

The Indians were to be free and not slaves. Law 1, libro 6, titulo 2, Charles V, 1526.

"Encomenderos" were prohibited from selling Indians as slaves. Law 2, lib. 6, titulo 2, Charles V, 1541.

Indian caçiques were prohibited from holding their subjects as slaves (Law 3, *idem.*, Charles V, 1538). Several other laws, of the same general purport in regard to the freedom of the Indians, are to be found in the same title. One provides for the pursuit and severe punishment of the Portuguese of Brazil, who had made it a practice to raid the missions of Paraguay in order to carry the Indians into slavery (Law 6, *idem.*, Philip IV, 1628). It was even prohibited to sell Indian captives taken in war, and this prohibition was so strongly worded that it read that no man could sell, barter, transfer, or exchange any such captive, even with the captive's own will. Law 7, lib. 6, tit. 2, Philip III, 1618.

The Spaniards had a dread of the unwholesome influence of half-breeds, squaw-men, and refugees. No Spaniard, unless sick and unable to travel, was permitted to remain in an Indian village more than one full day, not counting the day of arrival or the day of departure. A penalty of fifty dollars in gold was imposed upon each infraction of this law.

* Vol. vi, p. 65, January, 1893.

No Spaniards, negroes, mulattoes, or mestizoes were permitted to live in Indian pueblos (Law 22, lib. 6, titulo 3, Philip IV, 1646), not even when they had bought land of the Indians.

Ningun Español, que fuere de camino à qualquier parte que sea, sin justa causa no demore, ni esté en los Pueblos de Indios por donde hiciere el viage mas tiempo del dia que llegare, y otro, y al tercero se parta, y salga del Pueblo, pena de que si mas se detuviere, pague por cada dia cincuenta pesos de oro de minas, aplicados por mitad, à nuestra Camara, y Fisco, y la otra al Juez, y Denunciador, por iguales partes. (Law 23, lib. 6, titulo 3, Charles V, at Valladolid, November 20, 1536.)

This law of exclusion is observed to this day in many of the Indian pueblos, particularly among the Yaquis.

Philip III, in 1600, extended the privilege to merchants, so that they could remain three days (Law 24, lib. 6, titulo 3). In visiting a pueblo white men were not allowed to stop at the house of an Indian when "mesones" or places of entertainment had been established. Law 25, lib. 6, titulo 3, Philip II, 1563.

Titulo 5, libro 6, is devoted to the general subject of taxes and tributes to be paid by the Indians. We learn that Indian caçiques and other officials were not to pay taxes of any kind; but, on the other hand, this exemption applied only so long as they abstained from participation in the dances, drinking bouts, feasts, and other ceremonies of the natives.

No half-breed could be a caçique among the Indians. Law 6, lib. 6, titulo 7, Philip II, 1576.

In Titulo 7 of libro 6 are many beneficent laws for the regulation of the internal life of the Indian pueblos. No caçique could hold one of his own people in slavery, draw excessive tribute from them, receive their daughters in vassalage, or kill any of them at the time of the funeral of another caçique. (For the last item, see Law 15.)

Tlascalans were to be treated with special consideration in gratitude for services rendered to the Spaniards under Cortez. Law 39, Philip II.

The Indians of Tlascala were to be permitted to write to the King of Spain direct, without hindrance from the viceroys of Mexico or anybody else. Law 45, Philip II, 1581.

Indians could sell their property holdings under the supervision of the legal authorities. Law 27, Philip II, 1571.

Indians were to be permitted to hold their own "tianguez" or markets as of yore. Law 28, Charles V, 1552.

Severe penalties were imposed upon those Spaniards who should endeavor, in collusion with the caçiques or others of the Indians, to get up "corners." Law 29, Charles V, 1551.*

Arms were not to be sold to Indians. Law 31, Ferdinand and Isabella, in Grenada, 1502.

Ecclesiastics were forbidden to receive bequests for church purposes from rich Indians when there were natural heirs. Law 32, Philip II, 1580.

Indians were not allowed to ride on horseback (Law 33, Philip II, 1568), but special license might be given by governors, and Indians could also carry official dispatches or use horses in other cases of emergency. Law 34, *ibid.*

Indian dances were to be conducted with decency and moral cleanliness. Law 38, Philip II, 1576.

No liquor was to be sold to Indians. Law 36, Philip II, 1575.

Civil judges alone should try cases of witchcraft among Indians. Law 35, Philip II, 1575.

Indians were to be kept in their own villages as much as might be possible with kindness, so that the ecclesiastics appointed over them might all the more readily become acquainted with them and be able to advance them in Christianity and civilization; the natives were to be told why this law was passed. Law 20, Charles V, 1532.

No work of any kind was to be imposed upon recently subjugated Indians, and no taxes of any kind levied for the space of five years (Law 20, Philip III, 1618). The same law provided that in the meantime every effort should be made to instruct them in useful work.

Indian officials could retain their offices; laborers should cultivate their fields according to their own customs; idleness was

*This Law 29 was interpreted most rigorously and was followed by others of much the same tenor. Indians could sell only in the designated market place, plaza or "tianguez;" they could not go to the house of any civil, military, or ecclesiastical dignitary to dispose of their wares. This was expressly to prevent their being cajoled or intimidated into accepting low prices. Neither could an Indian sell to any person whom he met in the road on his way to market. Strange as it may seem, this law is observed to our own day by the Pueblos of New Mexico and the Indians of Mexico in many places.

to be discountenanced and prohibited in every way. Law 22, Charles V, 1552.

Indians were to be encouraged to raise live-stock. Law 22, Charles V, 1551.

Free commerce was to be encouraged between Indians and Spaniards. Law 23, Philip III, 1602.

Indians should freely sell their fruits and other productions. Law 25, Charles V, 1551.

Indians should wear clothing. Law 22, *op. cit.*

Special attention was to be paid to Indian trade, to the end that the natives should not be cheated, overcharged in business, or made to pay excessive fines; this duty was imposed upon the viceroy. Law 26, Philip III, 1601.

Indians were not allowed to sell or alienate in any way their property. Law 2, lib. VI, tit. 2, Philip III, 1609.

The Caribs, who were alleged to be cannibals and to be making war upon the tribes of the mainland for the purpose of securing human victims, were exempted from the provisions of these laws. Law 13, lib. VI, tit. 2, Philip II, 1569.

In every "reduccion" or mission of Indians there was to be a chapel in which mass could be said with decency, and this chapel was to be provided with a door which was to be locked with a key (Law of Philip III, 1618). In these chapels there were also to be sacristans, one for each, and two or three "cantores" or singers. Philip III, 1618.

Indians who were employed as servants in houses were to be properly supported, fed, taught the Christian doctrine, and treated when sick. A sick Indian could break a contract when he did not receive proper medical attention, and his master was obliged to pay him all dues, and when the Indian recovered his health the master had no claim upon him for services. Law 22, lib. VI, tit. 13, Philip III, 1618; also Law 23, by the same king.

A church ornament (kind not mentioned), a chalice, with its paten, and a bell were ordered given from the royal treasury to each and every new monastery established in the Indies. Law 5, lib. I, tit. 3, Philip II, August 24, 1588.

At a still later date, but too late for incorporation in this "Recopilacion," laws were passed confirming in perpetuity to each Indian pueblo in New Spain one league of land in each of the four cardinal directions.

There were other enactments concerning the inheritance of the "repartimientos" and "encomiendas" granted to the early "conquistadores" and their immediate descendants, but these applied less to the aborigines than to the Spaniards.

An explanation of the term "conquistadores," as applied to the early Spanish explorers, must be found in the use of terms in old Spain. We may find that "conquest here means maintaining the struggle or the duty of conquering. While the Moors were still unconquered in the south of Spain, certain parts of their territory were said to belong to the Conquest of Castile, others to the Conquest of Aragon." Alvarez, "Abyssinia," Hakluyt Society, London, 1881, p. 114, foot-note.

I did not find in the "Recopilacion" any laws upon the subject of Indian "peonage." All such laws would seem to have been passed by the Spanish colonies after separation from the mother country or by the viceroys in the decadence of Spanish supremacy.

For these laws, which practically reduced men to slavery for debt, no palliation whatever can be found; but they were by no means peculiar to Spain or to Spanish America. Imprisonment for debt, merely another name for slavery, prevailed in England down to the first years of Victoria's reign and until Charles Dickens assailed the system with his powerful pen. In France less than two centuries ago the brilliant Pascal, in his "Lettres Provinciales," bitterly assailed the Jesuits for advancing the heretical doctrine that insolvency might be innocent or fraudulent, and that to imprison innocent debtors meant destruction to commerce and the state.

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## THE BASKET DRUM.

BY DR. WASHINGTON MATTHEWS, U. S. A.

To most observers the object shown in Fig. 1 may seem a simple basket, but it is much more to many an untutored savage. The art of basket-making is today little cultivated among the Navajos. In developing their blanket-making to the highest point of Indian art, the women of this tribe have neglected other labors. The much ruder, but cognate Apaches, who know not how to weave woolen fabrics, make more baskets than the Navajos and make them in greater variety of form, color, and quality. The basket illustrated is, however, of Navajo make, and it is skillfully fabricated, yet it is almost the only form and pattern of basket now made in the tribe. They buy most of their baskets from other tribes; but, having generally let the art of basketry fall into disuse, they still continue to make this form for the reason that it is essential to their sacred rites and must be supplied by women of the tribe who know what is required. It is made of twigs of aromatic sumac—a shrub which has many sacred uses—wound in the form of a helix. The fabricator must always put the butt end of the twig toward the center of the basket and the tip toward the periphery. A band of red and black, with zigzag edges, is the sole decoration. This band is not continuous, but is intersected at one point by a narrow line of uncolored wood. When I first observed this, years ago, I fancied that it had some relation to the "line of life" observed in ancient and modern Pueblo pottery, and that its existence might be explained by reasons as metaphysical as those which the Pueblos give for their "line of life;" but the Navajo has at least one reason of a more practical character. The line is put there to assist in the orientation of the basket at night in the medicine-lodge when the fire has burned low and the light is dim. In an article published in the *American Anthropologist* (October, 1892) I explained the law of butts and tips in Navajo ceremonies and may not now repeat the explanation. It must suffice to say that throughout their ceremonies careful discrimination is made between the butt and the tip, the central and the

peripheral ends, and that the butt has precedence over the tip. This law applies to the basket in question as well as to other sacred things. The butt of the first twig, placed in the center, and the tip of the last twig, in the edge, must lie in the same radial line, and this line is marked by the hiatus in the ornamental band. The rim of the basket is often so neatly finished that the medicine-man could not easily tell where the helix

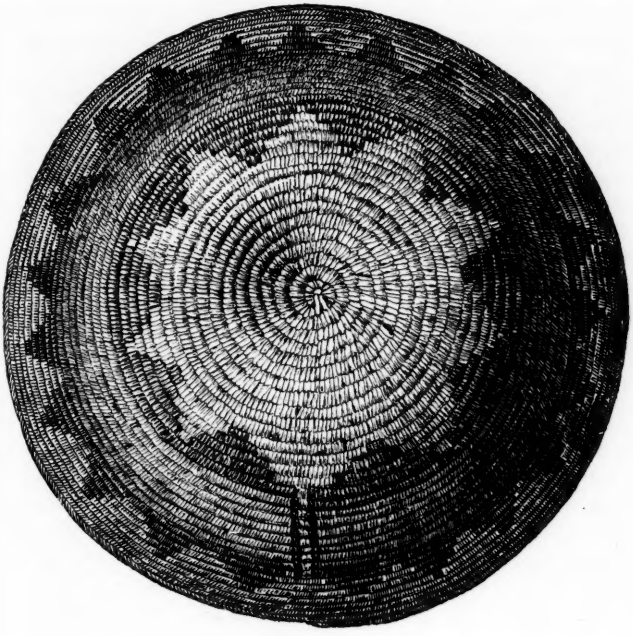

FIG. 1.

ended were not the pale line there to guide him. This line must lie due east and west when the basket is employed in the ceremonies.

The most important use of the basket is as a drum. In none of the ancient Navajo rites is a regular drum or tomtom employed. The inverted basket serves the purpose of one, and the way in which it is used for this simple object is rendered devious

and difficult by ceremonious observances. To illustrate, let me describe a few of these observances belonging to the ceremony of the night-chant. This ceremony lasts nine nights and nine days. During the first four nights song is accompanied only by the rattle. During the last five nights noises are elicited from the basket-drum by means of the yucca drumstick. This drum is beaten only in the western side of the lodge. For four of these five nights the following methods are pursued: A small Navajo blanket is laid on the ground, its longer dimension extending east and west. An incomplete circle of meal, open in the east, of the diameter of the basket, is traced on the blanket near its eastern end. A cross in meal, its ends touching the circle near the cardinal points, is then described within the circle. In making this cross a line is first drawn from east to west, and then a line is drawn from south to north. Meal is then applied sunwise to the rim of the upturned basket so as to form an incomplete circle with its opening in the east. A cross similar to that on the blanket is drawn in meal on the concavity of the basket, the east-and-west line of which cross must pass directly through the hiatus in the ornamental band. The basket is then inverted on the blanket in such a manner that the figures in meal on the one shall correspond in position to those on the other. The western half of the blanket is then folded over the convexity of the basket and the musicians are ready to begin; but before they begin to beat time to a song they tap the basket with the drumstick at the four cardinal points in the order of east, south, west, and north. The Navajos say, "We turn down the basket" when they refer to the commencement of songs in which the basket-drum is used, and "We turn up the basket" when they refer to the ending of the songs for the night. On the last night the basket is turned down with much the same observances as on the previous nights, but the openings in the ornamental band and in the circles of meal are turned to the west instead of to the east, and the eastern half of the blanket is folded over the concavity of the basket. There are songs for turning up and for turning down the basket, and there are certain words in these songs at which the shaman prepares to turn up the basket by putting his hand under its eastern rim, and other words at which he does the turning. For four nights, when the basket is turned down, the eastern part is laid

on the outstretched blanket first and it is inverted toward the west. On the fifth night it is inverted in the opposite direction. When it is turned up, it is always lifted first at the eastern edge. As it is raised an imaginary something is blown toward the east, in the direction of the smoke-hole of the lodge, and when it is completely turned up hands are waved in the same direction, to drive out the evil influences which the sacred songs have collected and imprisoned under the basket.

The border of this, as of other Navajo baskets, is finished in a diagonally woven or plaited pattern. These Indians say that the Apaches and other neighboring tribes finish the margins of their baskets with simple circular turns of the investing fibre like that in the rest of the basket. The Navajo basket, they believe, may always be known by the peculiar finish described, and they say that if among other tribes a woman is found who makes the Navajo finish she is of Navajo descent or has learned her art of a Navajo. They account for this by a legend which is perhaps not wholly mythical. In the ancient days a Navajo woman was seated under a juniper tree finishing a basket in the style of the other tribes, as was then the Navajo custom, and while so engaged she was intently thinking if some stronger and more beautiful margin could not be devised. As she thus sat in thought the god Qastceyelçi tore from the overhanging juniper tree a small spray and cast it into her basket. It immediately occurred to her to imitate in her work the peculiar fold of the juniper leaves and she soon devised a way of doing so. If this margin is worn through or torn in any way the basket is unfit for sacred use. The basket is given to the shaman when the rites are done. He must not keep it, but must give it away, and he must be careful never to eat out of it, for, notwithstanding its sacred use, it is no desecration to serve food in it.

### *The Drumstick.*

The next thing to be examined is the drumstick with which this drum is beaten. I shall describe now only the stick used in one rite—that of the night-chant. The task of making this stick does not necessarily belong to the shaman; any assistant may make it; but so intricate are the rules pertaining to its construction that one shaman has told me he never found any one

who could form it merely from verbal instructions. Practical instructions are necessary. The drumstick is made anew for each ceremony and destroyed, in a manner to be described, when the ceremony is over. It is formed from the stout leaves of *Yucca baccata*, a species of Spanish bayonet, but not every plant of this kind is worthy to furnish the material. I have seen an hour spent in search for the proper plant on a hillside bristling with *Yucca baccata*. Four leaves only can be used, and they must all come from the same plant, one from each of the cardinal points of the stem. All must be of the proper length and absolutely free from wound, stain, withered point, or blemish of any kind. These conditions are not fulfilled on every yucca. The leaves may not be cut off, but must be torn off downward at their articulations. The collector first pulls the selected leaf from the east side of the plant, making a mark with his thumb nail on the east or dorsal side of the leaf near its root, in order that he may know this leaf thereafter. He walks sunwise around the plant to the west side, marks the selected leaf near the tip on its palmar (east) surface, and culls it. He then retreats to the south side of the plant and collects his leaf there, but does not mark it. Lastly, he proceeds sunwise to the north and culls his last leaf, also without marking it. When the leaves are all obtained the sharp, flinty points and the curling marginal cilia are torn off and stuck, points upward, in among the remaining leaves of the plant from which they were culled. The four leaves are then taken to the medicine-lodge to be made up. The leaves from the east and west are used for the center or core of the stick and are left whole. The leaves from the north and south are torn into long shreds and used for the wrapper; but since the shaman cannot adequately explain in words to the devotees who assist him how the stick is made, I shall not attempt the task in this paper. I have learned how to make it, and at some future time may describe the method of making with the aid of illustrations. In Fig. 2, which represents the drumstick, it will be observed that the core of the stick is divided by a suture of yucca-shred into five compartments, one for each night during which the stick is used. Into each of these sections are usually put one or more grains of corn, which, during the five nights that the implement is in use, are supposed to imbibe some sacred properties. When the ceremony is all over

these grains are divided among the visiting medicine-men, to be ground up and put in their medicine-bags. On the last morning of the ceremony, at dawn, when the last song of sequence has been sung and the basket turned up, this drumstick is pulled to pieces in an order the reverse of that in which it was put together. This work may only be done by the shaman who conducted the rites, and, as he proceeds with his work, he sings the song of the unravelling. As each piece is unwrapped it is straightened out and laid down with its point to the east. The débris which accumulated in the manufacture of the drumstick and which has been carefully laid away for five days is now brought forth and one fascicle is made of all. This is taken out of the lodge by an assistant, carried in an easterly direction, and laid in the forks of a cedar tree (or in the branches of some other large plant, if a cedar tree is not at hand), where it will be safe from the trampling feet of cattle. There it is left until destroyed or scattered by the forces of nature. The man who sacrifices these fragments takes out with him in the hollow of his left hand some corn-meal, which he sprinkles with the same hand on the shreds from butt to tip. He takes out also, in a bag, some pollen, which he sprinkles on them in the same direction with his right hand. As he does this he repeats in a low voice the following prayer or benediction:

FIG. 2.

Qojolel kòçe.
(Thus will it be beautiful.)
Qojogo nacaco koçe citsoi.
(Thus walk in beauty, my grandchild.)

The drumstick soon loses its freshness and becomes withered, shriveled, and loose. A few taps of one in this condition on the

basket would knock it all to pieces. Even during the short time that the stick is in use for its sacred purpose it would shrivel and become worthless were it not buried in moist earth all day and taken forth from its hiding place only when needed for the ceremonies of the night.

I have said that the drumstick, when the ceremonies are done, must be pulled apart while a song is sung, and that its fragments must be deposited, with prayer and ceremony, in the fork of a cedar tree or other secure place. How, then, it may be asked, have I come into possession of my drumstick? It was made for my instruction by a shaman, not in the medicine-lodge, but in my own study. Such it is his privilege to do for any recognized student of the rites. I have had several drumsticks made and pulled apart for my instruction, and I have made them myself, under the observation and criticism of the shaman. This one I was allowed to retain intact. No one had ever sung or prayed over it. It had never been used in the rites. It was therefore unnecessary to tear it apart, to release its soul and sacrifice its substance to the gods.

## BOOK NOTICES.

*Blackfoot Lodge Tales: The Story of a Prairie People. By George Bird Grinnell, author of "Pawnee Hero Stories and Folk-Tales." New York, Charles Scribner's Sons, 1892, 8°, xv, 310 pp.*

Of the half dozen men in this country who know an Indian, the author of this worthy companion to "Pawnee Hero Stories" is one. About these Blackfoot tales there is a memory of tipi smoke and painted buckskin, of rattle and medicine song, that comes only from having sat within the magic circle when the fire burned low, to listen to the old men recount the legends of their tribe, while the dogs barked outside and the coyote answered from the hills. The author has that rare combination of scientific accuracy with attractive literary style which makes all that he writes a reference dictionary to the ethnologist and a pleasure to the folklorist and the popular reader.

The thirty tales of the volume are classified as stories of adventure, of ancient times and of *Old Man*, the hero god of the Blackfeet. They are told as the Indian tells them, without any of the false coloring of the ignorant romancer and without the superfluous toning down sometimes attempted by the commentator of a higher civilization. They show us the Indian as he is and was, not the gloomy hero of Cooper or the incarnate devil of the dime novel and the melodrama, but a primitive man, living close to nature, with all the characteristics of mental childhood. We find him like any other child, whimsical, uncertain, simple and kind-hearted, yet cruel in his revenge and unthinking in his passion, sometimes really heroic in his sense of natural justice, but forever liable to throw all his fine theories to the winds on the caprice of a moment.

A good illustration of this is afforded in the story of the Piegan peace with the Snakes, where, after years of mutual hatred and slaughter, the chiefs of the two tribes meet by accident in a cave at night and come to the generous conclusion to be brothers. They discuss the evils of war and the beauties of peace and fellowship, and decide that hereafter their people shall be

friends. Each goes home to his own tribe, nearly a whole month's journey from their meeting place, councils are held, speeches are made by the old men, and at last the whole of the two tribes, the Blackfeet from the Saskatchewan and the Snakes from the mountains of Idaho, start simultaneously to the buffalo plains midway to ratify the treaty made by their chiefs. Days and days they travel and finally they come in sight of each other. Then there are greetings and welcomes, buffalo hunts together by day and feasts and dances together at night, and many young men win sweethearts and wives in the camp of their former enemies. At last the hunt is over, the buffalo meat is dried, the tipis are taken down and the *travois* packed, and each tribe starts back for its distant home. The Blackfeet and the Snakes are friends forever. But some young men are racing horses and linger behind for one last trial of speed. Each side claims the victory and the stakes. They quarrel, and before the women and dogs have finally disappeared over the hills the warriors are back again to sink their tomahawks in each other's heads, and "since that time the Snakes and Piegans have never been at peace."

A pretty instance of the sign language occurs in the same story, where the chief of the Snakes, sitting up in the darkness of the cave, takes hold of the hand of the Blackfoot chief, and by waving to and fro (the question sign) asks who he is, to which the other replies by rubbing his hand against the cheek of the Snake (the sign for Piegan). The story of the buffalos that ate human flesh until their nature was changed by *Old Man* is paralleled in the Kiowa myth of Sinti, who in like manner reduced the deer and antelope from dangerous carnivora to timid ruminants. The story of the bad son-in-law who kept all the buffalo hidden under the water and killed one at a time as he wanted it is paralleled in the mythology of many other tribes, notably in the Cherokee myth of Kanati, the owner and lord of the game. Kutoyis, the hero born of a clot of blood and grown to strong manhood in four days, has also his parallel among the Cherokees in the east and the Omahas on the plains.

The chapter on the history and migrations, the social organization and the religion of the Blackfeet, and on their present condition, contains valuable information to be obtained from no other source. It is interesting to note how the possession of

the horse changed the tribe in a few generations from half-starving hunters in the timber to warlike raiders of the plains. In typography and general make-up the volume accords well with its contents. JAMES MOONEY.

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*Die Juden und der Antisemitismus: Israel unter den Nationen (The Jews and Antisemitism: Israel among the Nations). By Anatole Leroy-Beaulieu, of the French Institute. Translated into German by Carl von Vincenti. Separate Print from the "Freie Blatt," the organ for combating Anti-Semitism. Authorized Translation. Wien, 1893, 12°, xv, 349 pp.*

This work, by the distinguished author of "The Papacy, Socialism and Democracy," is the most important contribution yet given to the world on the subject of the Jewish question in Europe, and in the same connection has much to do with the broader subject of the relation between race and religion. It discusses the Jew from every standpoint, that of ethnology, history, folklore, religion, social rank, education, and physiology, and leaves very little indeed to be added. The broad spirit in which the discussion is handled appears from the first words of the author's preface, in which he tells us that the book is written by a Christian and a Frenchman, by one who believes, as a Christian, that intolerance and racial hatreds are contrary to the spirit of Christianity, and who holds, as a Frenchman, that mankind must be true to the ideals of justice and liberty.

He estimates the Jewish race at from 7 to 9 millions, scattered among from 500 to 600 million Christians and Mohammedans. Although his estimate is necessarily very elastic, it is probably nearer the truth than that of Rabbi Wise, who gives them 20 millions. Of these 7 or 9 millions about one-half are in Russia (chiefly in Russian Poland), 1,700,000 in Austria, 600,000 in Germany, and about 300,000 in Roumania. Italy, France, and England have comparatively few, while in Spain and Portugal, where they once numbered half a million, all native Jews have been long since "baptized or banished." To both Americas he gives perhaps half a million, while in all Asia, the cradle and home of the race, there are barely 300,000. A significant commentary upon the futility of race or religious persecution is the

fact that the Jews are more numerous now than ever before in their history and are increasing relatively much faster than the Christians. This fertility of oppressed peoples is a well-known paradox in anthropology, notably in the case of the Irish and the southern negro.

The author traces the history of the Jews as an alien people within a hostile nation from the time when Pharaoh took alarm at their numbers and influence and inaugurated the first *Judenhetze*, down through the centuries to the day when Haman stood before the Persian king to complain that there was a certain people scattered abroad through all the provinces of the kingdom whose laws were diverse from those of all other people, so that it was not for the king's profit to suffer them; then, crossing over into Europe, he shows how the old pagan writers of Rome and Greece repeatedly strove to rally the forces of pantheism to resist the spread of the Jewish monotheism, the same old alarm for the "national ideal" about which we hear so much from the German politicians of today, and, finally, when monotheism had won the fight, he shows how the fathers of the early Christian church gave stamp and fixity to the persecution, in order to outlaw the Jew from all community with the newly converted barbarian, who failed to distinguish any essential difference between the God of the gospel and the God of the Pentateuch.

The Jewish problem, in its present aspect, he declares is not a survival or an atavism, but is the outgrowth of modern conditions dating from the emancipation of the Jews by the French revolution. He defines it as threefold, religious, national and social, and asserts that Anti-semitism has studied Darwin and served under Bismarck, and obtains its weapons from the modern theories of civics, science and political economy. He discusses each phase of the question in turn, and shows conclusively that the present Jewish type, with all that that implies of physical, mental and moral characteristics, is the artificial product of fifteen centuries of Ghetto life, together with what may be described as a rigid system of religious hygiene, rather than the natural consequence of purity of blood descent.

He devotes a chapter to the folklore of the Jewish question, in which he recounts the various superstitious beliefs concerning the Jew, which made the child of Abraham an Ishmaelite rather

than an Israelite. Of special interest are the chapters on the physiology and psychology of the Jew, in which he discusses the physiologic traits and peculiar diseases and the abnormal mental characteristics resulting from hundreds of years of persecution, ostracism, and restriction to specialized occupations in crowded pestilential quarters (ghettos) of large cities. The outcome has been an intense development of intellectual powers, but at the expense of physical stamina. As is usually the case, the danger lies in the very delicacy of the machine. The Jew is the brainiest man in Europe, but he is a bundle of highstrung nerves, and more than all other men he is liable to nervous collapse and insanity.

Although the author makes the pessimistic assertion that the Jewish question is a permanent and growing one, it seems to us that his own book refutes the argument, and that the characteristics which have rendered the Jew a menace and an alien to so many European governments will soften and disappear with the growth of a broader humanity. If despotic Russia and imperial Germany and Austria have a Jewish problem, while republican France and constitutional England have none, we are forced to believe that it is because every country has the Jew that it deserves, and that the true remedy is in the application of the Golden Rule formulated so long ago by the greatest of the Jewish race.

JAMES MOONEY.

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*Die Medicin der Naturvölker. Ethnologische Beiträge zur Urgeschichte der Medicin. Von Dr. Max Bartels, Sanitätsrath in Berlin. Leipzig: Th. Grieben's Verlag (L. Fernau), 1893, pp. 361; 175 ill., 8vo.*

It is seldom one's fortune to find between the covers of a single volume so complete and systematic a treatise of an ethnologic subject as the author has presented in the present work on Medicine among Primitive Peoples. The subject embraces the medico-religious *culture-status* of peoples of diverse countries, presenting the various psycho-physiological theories regarding the cause and cure of disease.

It is generally believed by our North American Indians that diseases are caused by (1) the presence of a demon, located in

the body through the intermediary of a shaman seeking revenge; (2) the existence of an evil spirit because of neglect on the part of the sufferer of certain duties or observances connected with his personal *manido* or tutelary daimon; (3) the effect of magic or sorcery, produced by jealous rivals, or the *wâbeno;* (4) the direct vengeance of the Great Spirit; and numerous other causes closely related to the preceding.

The subject of *Sickness*, which forms part II of the volume, is thoroughly discussed from every standpoint, and is followed in order by a chapter on *Physicians*—medicine-men, their social status, supernatural pretensions, callings, different kinds of mystery men and women and their specialties, initiation into societies, etc. The *Procedure in Diagnosis of Disease* receives some attention, while *Medicaments and their Application* are fully discussed, as is also the subject of *Primitive Therapeutics*. *Hydropathic* treatment embraces cold and hot baths, drinks, and vapor baths, the latter being by many peoples one of the most rigidly-adhered-to observances preparatory to undertaking anything of a serious nature.

*Diagnosis and Prognosis* of diseases are treated of as relating to the calling of the juggler or prophet, while *Treatment of Supernatural Effects* receives considerable attention, as also the *Pathology of the Diseases* of certain organs and parts of the body. The *Prevention of Disease*, followed by *Minor* and *Major Surgery*, conclude the treatise.

The author adds an appendix explanatory of the 175 illustrations, presenting many remarks pertaining thereto that would have been inappropriate in the text. The entire work concludes with a bibliography of the works cited, a list of geographical localities, and peoples referred to.

W. J. Hoffman, M. D.

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*Wah-kee-nah and her People. The Curious Customs, Traditions, and Legends of the North American Indians. By James C. Strong, U. S. A. New York, 1893. G. P. Putnam's Sons, 275 pp., 1 pl.*

The author of this book, in the prosecution of his duties, was thrown among a great many tribes of our aborigines at a time when they were little changed by civilization. The title of the

book "Wah-kee-nah," is the name of a Yakima girl, a daughter of one of the chiefs, who in 1850–'55 lived in the family of General Strong. Her character and idiosyncrasies are told in a very charming manner; but the especial value of this book to the ethnologist lies in the fact that in all the chapters the author has brought together bits of information concerning the dress, home-life, and industries of many tribes. The reader will find occasion frequently throughout the book to take notes of material which is not accessible elsewhere. O. T. Mason.

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## NOTES AND NEWS.

L. Capitan, in the "*Revue Mensuelle de l'École d'Anthropologie*" *of Paris*, has a study upon the influence of social conditions upon the *morbidité* of individuals. He makes a general classification of maladies: First, of those consequent upon imperfect nutrition; second, of those caused by infection; third, of those due to traumatism; fourth, of those caused by nervous reaction.

Among the innumerable natural causes which may be noted are the climatic, the extremes of heat, of cold, and of humidity, against which the well-to-do are protected by sufficient clothing and the absence of any necessity for personal exposure, while the miserable subject, debilitated by the many privations consequent upon his social condition, is exposed to the rigors and variations of the temperature and is obliged to suffer the direful consequences. Natural causes are also profoundly influenced and modified by those of the social order; the pure air is rendered noxious by impure gases and volatile poisons, to which, in pursuit of their profession or employment, individuals, and frequently whole communities, are subjected. A sewer workman will breathe during his working hours air that Miyuel has shown contains 8,900 microscopic organisms per cubic meter, while that breathed by those upon the Rue de Rivoli does not contain more than 750, and that at the summit of the Pantheon not more than 28 per cubic meter. These examples could be multiplied indefinitely.

Individual causes are classed as intrinsic and extrinsic, the former being essentially comprehended in auto-intoxication and

auto-infection, the possibility of infection being always present, as our organism carries constantly with it agents capable of infection, microbes, which quickly pass from a passive to an active state.

Extrinsic causes differ absolutely from the intrinsic, and yet it is not unusual to see them associated. Often intrinsic pathogenic influences prepare the way for infection or for extrinsic intoxication. The extrinsic causes of *morbidité* are innumerable. The principal may be grouped as follows: alimentation, hygiene, including the care of the skin; clothing, genital functions, repose, physical work, exercise, intellectual work, etc.

Alimentation constitutes the first chapter of these extrinsic causes and, as is well known, is a powerful factor in producing a series of diverse maladies depending in degree and character upon the character, quality, and quantity of the aliments employed.

Water is a most important and powerful cause of disease, and it is not necessary to demonstrate its rôle in the production of cholera, fevers, etc. It also serves to introduce into the organism various parasites—the *ascaradie lombricoïde*, *oxyures*, the *anchylostome*, etc.

All fermented drinks are poisons. The fatal progression of alcoholism, correlative with the rapid ascension of the curve marking the quantity manufactured and the consumption of alcohol, follows precisely the curve indicating the progress of alcoholic insanity.

From the social point of view, the alcohol consumed by the rich is not the same as that consumed by the poor. It is ordinarily less poisonous, the individual reaction varies, and the visceral alcoholism of the rich is manifested by a symptomatology differing from the alcoholism of the poor.

The far-reaching effects of alcoholism upon the race are terrible, and it often results in the complete disappearance of entire ethnic groups.

Social influences play an important part in causing poisoning by the forced consumption of bad meats.

Milk transports inflectious germs, coming from the animal which furnishes it. It is contaminated by the utensils in which it is placed, by the hands that manipulate it, by the air to which it is exposed, and very frequently by flies.

Bread is also subject to contamination in various ways—in the preparation and in the cooking, by the use of poisonous utensils, etc.

In short, *morbidité* may result equally from an excessive or an insufficient régime, a fact which renders this study a social question *par excellence.*

The rich ordinarily eat too much and the poor too little. The great eater furnishes a fertile soil in which infection easily germinates, and inversely an insufficient régime contributes to inanition.

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THE ORTHOGRAPHY OF SCIENTIFIC LANGUAGE.—M. de Lacaze-Duthiers, president of the French Academy of Sciences, recently opened a séance of that body with a paper upon a subject perhaps a little unexpected, but interesting to very many—"The present orthography of scientific language."

"It is now more than a century," said he, according to *Le Temps*, "since Linnæus proposed his rules, always correct and sensible, which today are too often forgotten. He found that words or terms of too great length become nauseous. This is his expression: 'Nomina generica sesquipedalia, enunciatu difficilia vel nauseosa fugienda sunt,' and Linnæus was right.

"Here is one of these words, and you will excuse me from pronouncing it: Monolasiocallenomonophyllorum.

"What would Linnæus say if he should return in our day and have brought before him to pronounce correctly the modern chemical terms we have here?

"You know that they are seeking to artificially color white flowers. If, then, a part of the audience wishes to have these flowers green, it will be necessary for them to seek a shop for chemical products and demand the acid, diéthyldibenzyldamidotriphénylcar binotrisulfureux, for the purpose of making a solution in which to dip these white flowers. Is it at all necessary to say that this word is of the character of those of which Linnæus said, 'Enunciatu difficilia, nauseosa, fugienda sunt'? Who, then, will say it would not be well (outside of the natural sciences, for which I do not pretend to speak) to follow the principle of Linnæus in making new names a little shorter?

"In conclusion, I declare it here, and it is here that I wish to

declare it, that I shall be a rebellious recruit in the suppression of the signs characterizing an etymology which cannot be dispensed with. I hold to the retention of phoneticism in the sciences, preserving the orthography and the conventional signs of the etymologies, leaving, then, to live in peace the *ph* and the *y*, the *ch* and the *th*, which render us the greatest service, but leaving also to be eradicated all these peculiarly strange orthographies which have no reason of being and that an inexplicable practice has perpetuated without knowing why.

"In a word, let us preserve a scientific orthography reasonable and useful."

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THE TÉRRABA INDIANS.—The Térraba or Tiribi Indians of Costa Rica, Central America, dwell upon the Pacific slope, near the southern border of that country. H. Pittier, who carried on explorations among them in behalf of the territorial government, was brought to believe by their relics that they were a mixture of the various tribes which had been induced to settle in the Diquis valley by the Franciscan missionaries of the eighteenth century. Among them the Terbis or Tervis, who had come from the northern coast, were prominent, and hence the whole assemblage of tribal remnants received the name Terbis or Térrabas. The language of the Térrabas was also adopted by the other portions of the racial conglomerate and, in fact, it is much like the language of the Bribris and other tribes still extant on the Atlantic side of the cordillera.

The Brunka or Bóruka is another cognate people now living three leagues south of the Térrabas. They are of purer origin and are of altogether different appearance. To strangers they communicate words of their vernacular with great reluctance. Dr. William M. Gabb has studied their language extensively and has published a memoir on the whole linguistic group—Guatuso excepted—and Bishop B. A. Thiel has added considerably to our knowledge of it; now H. Pittier is taking up the subject again.

In the preliminaries to his "Ensayo lexicografico sobre la lengua de Térraba" he places the dialects of the Talamanca province in one linguistic family, and to this also pertain the dialects of New Granada eastward to the gulf of Darien, as

Guaimi, Dorasque, Changuina, Chaliva, Cuna, and others. The Bribri group of Costa Rica embraces the Cabécar, Chirripó, Estrella, Tucurrique, and Térraba, part of which are called after rivers passing through the territory. The Brunka or Bóruka differs sensibly from these and should be classed as a separate language, though of the same family. The pronunciation of all these Indians is indistinct and far from sonorous. A peculiar feature of their language is the use of classifying terms, forming compound words with substantives or adjectives to express shape and form of the objects spoken of. So in Térraba the word kwó, *seed*, when suffixed in the above manner, points to something round, curvilinear, or globular, as in bokuó, *face;* kuguó, *knee;* feringuó, *testicle.* Other classifiers of this description are -kró, -gró for *long* objects, -sho indicating *stuff* or *material* of which objects are made, -uoh forming *collective* nouns. These statements are from Carlos Gagini, "Grammatic sketch of Térraba," which forms part of the "Ensayo." Many of the sensations and mental processes which we attribute to the heart are attributed by the Costaricans to the *liver*, guo, and hence such words as *to think*, *remember*, *forget*, *desire*, *sad*, *joyful* are compounded with the syllable guo. A. S. GATSCHET.

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THE USE OF THE BOW AND ARROW IN THE TIMOR GROUP.—Very little is known about the methods of arrow-release in the East Indian archipelago. The little I noticed on this subject during my travels through these regions in 1891, particularly in the Timor group, may be of interest.

The only localities in this group where I saw bow and arrows used are Central Timor (Belo), Adonara, and Flores. The inhabitants of Belo and Adonara practice the same release which I am at a loss to classify with certainty among any of the methods described by Prof. Edward S. Morse. The arrow is grasped between thumb and forefinger of the right hand, while the other three fingers pull the bow-string back. Some Solorese of Adonara, however, left off the little finger after the bow was strung, and the arrow was to be shot. In this latter case it would seem to indicate the secondary release. The forefinger of the bow-hand encloses loosely the arrow so as to hold it against the left

side of the bow, which is held almost vertical. Whether any extra arrows are held in the bow-hand or shaft-hand, I am not sure.

In the island of Flores, the Sika and Lio tribes, largely of Papua blood, practice the primary release. The bow-hand (left) is held as by the Belonese and Solorese, and so is the arrow, to the left of the bow, vertical. A few extra arrows are kept in the bow-hand.

Bows and arrows in Timor, Adonara, and Flores are of a rather inferior type. The arrow-heads are made of iron, bone, and wood; the arrow-butts are not feathered.

In the parts of Polynesia I visited subsequently the bow and arrow are obsolete, and survive only as playthings for children.

DR. H. TEN KATE.

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THE AINU OF SAGHALIN.—Mr. B. Douglas Howard relates his experiences among the Ainu of Saghalin in his recent work, "Life with Trans-Siberian Savages (London, 1893). Says a writer in the *Scottish Geographical Magazine* for November, p. 604:

"Having got on very friendly terms with the governors of the Russian penal settlements in the far East, Mr. Howard found himself an honored guest in the most eastern of all, the island of Saghalin. Here, with the very necessary assistance of the governor, he was able to take up his abode in an Ainu village far from the touch of civilization. The people received him as a guest, installed him as Head Wizard in recognition of his professional skill as a surgeon, and finally elected him Honorary Chief. As such he was initiated into the mysteries of the making of poison for the arrow-heads, and with great difficulty saved himself from the infliction of having his ears bored and his person tattooed as marks of his Ainu adoption. . . . On his return to civilization Mr. Howard determined to continue his studies among the Ainu of Yezo, but found great difficulty in getting there. He finally reached Hakodate, shattered and bruised, having escaped with bare life from double shipwreck in two Japanese sailing vessels. This put an end to his active adventures. The book closes with an interesting comparison of the Ainu inhabitants of Saghalin and Yezo, the chief conclusion being their absolute identity in physique and customs and, apparently at least, to a large extent in language. Drunkenness, the besetting vice of the Ainu of Yezo, is unknown in Saghalin."

"DER BUDDHISMUS ALS RELIGIONS-PHILOSOPHISCHES SYSTEM" is an erudite inquiry into the origin and essence of the most remarkable of all the oriental religions, based more on speculation and research than on Zoroastrianism and Confucianism, but merged in mysticism during the later centuries of its history. Prof. Dr. Adolf Bastian has gathered in 63 pages (Berlin, 1893) the more important points of a lecture delivered by him in the ceremonial hall of the Ethnologic Museum in Berlin, of which he is the director, and illustrated the whole with three plates of diagrams. The purpose of the lecture is to prove that the metaphysical systems of India took origin independently of occidental philosophic development and yield the most fruitful points of comparison with occidental systems. By a series of parallels Bastian shows that the more noteworthy ideas of our philosophies, ancient and modern, have had their mainspring in Buddhism; also that the spirit of quietism and mysticism prevailing there is antagonistic to the progressive tendencies of our epoch. A. S. GATSCHET.

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ABORIGINAL USE OF SINEW.—The aborigines of America put sinew to a very great number of uses for which it is peculiarly adapted by its flexibility, lightness, great strength, and durability, and employ it in a variety of forms and sizes. In the making of clothing for men and horses, in the fabrication of weapons, including clubs, bows, arrows, etc., in the building of lodges, and for domestic and many other purposes its use is universal. For bow-strings and rough sewing the sinew of the buffalo is preferred as being coarser in texture, that of the elk being next in favor for these uses. The sinews of the deer, the antelope, the mountain-sheep, and the mountain-lion are also in high favor, that of the mountain-lion being considered the finest and most durable. The sinew is prepared for use by first removing all adhering flesh with the back of a knife. It is then stretched on a board or lodge pole and left to dry for an hour or so preparatory to the separation of the fibers or threads by twisting in the hands. By the same or similar twisting motion and by pulling the fiber can be extended to a reasonable length. Cords or small ropes are made by twisting many fibers together between two forked sticks fastened in the ground and during

the process rubbing with thin skins of the elk and deer to soften them. The largest cord I have seen made in this manner was one-fourth of an inch in diameter. To prepare it for sewing the sinew is wet and at the needle end rolled on the knee with the palm of the hand to a fine, hard point like that of a shoemaker's bristle. As suggested, the sinews are made sufficiently fine for use in fixing the guiding feathers and fastening the iron or flint heads of arrows and in the wrapping of clubs, etc. Formerly the awl used in sewing was of bone taken from the leg of the eagle. This has been displaced by the common sailor's needle. The over-stitch is that most commonly employed in aboriginal sewing.

ISHAM G. ALLEN.

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CENTRAL AMERICAN VOCABULARIES.—Toward the end of the eighteenth century the King of Spain, Charles III, gave orders to the colonial authorities to collect Indian vocabularies. Twenty-one of these are preserved in a manuscript of the royal archives at Seville, Spain, and when the ambassador Manuel M. Peralta had notified the Geographical Society of Madrid in 1882 that they were then accessible, the government of Costa Rica took occasion to publish a part of the manuscript for the ninth congress of Americanists, to be held in 1892 at San Maria de la Rabida, province of Huelva, in an edition of 200 to 300 copies. The Maya dialects contained in the collection, which is in lexicon octavo, are as follows: Poconchi, Cakchi, Quiché (two vocabularies), Cakchiquel (two vocabularies), Tzutuhil, Pocomán, Pupuluca, Chol, Zotzil, Tzental, Chanabal, Zoque, Mam. Subinha (pages 75–80) agrees with Maya dialects in a few words only. Belonging to other stocks are the Chapaneco (Mexico), Cabecara, Viceyta, Terraba (Costa Rica), and Lean y Mulía, which forms a dialect of the Xicaque of Honduras, and is especially valuable, as so little of that family has been published. The book holds 110 pages of solid text, and its main title is as follows: "*Lenguas indigenas* de Centro-America en el siglo XVIII segun copia del archivo de Indias (en Sevilla), hecha por el Licenciado don Leon Fernandez y publicada por R. F. Guardia y Juan F. Ferraz." San José de Costa Rica. Tipografia nacional, 1892.

A. S. GATSCHET.

THE CAHITA OR CA-ITA LANGUAGE is spoken in various dialects on the Yaqui river, Mexico, in the states of Sonora and Sinaloa, and belongs to a group of languages spoken in northwestern Mexico, on the Pacific slope, which are affiliated to Nahuatl, and comprises Cora or Nayarit, Tepegua, Opata, and Tarahumara, as well as Pima bajo and Pima alto. All these languages were studied at an early date by Spanish missionaries, and the grammar and vocabulary by the Jesuit Father Juan B. de Velasco is composed in an especially thorough manner. Velasco lived twenty years in Sinaloa and died in 1613. His *Arte de la Lengua Cahita* has just been republished by Eustaquio Buelna at Mexico, at the government printing office, 1891 (inside title, 1890—date of Buelna's introduction, December, 1891), and covers 63 + 264 octavo pages. Buelna has by his editing and additional remarks made the language much more intelligible to us. Cahita has rather abundant ways of deriving words from roots and stems; neither the verb nor the noun is very rich in inflectional form. The vocabulary shows at once the great affinity with Nahuatl (or Aztec). The only texts added to the volume are a catechism, with translation. About 3,600 vocables are mentioned.

A. S. GATSCHET.

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SKULL AND CHEST FLATTENING.—The custom of flattening the skull of infants prevails not only on the Pacific coast of North and South America, but extensively in Indonesia, as shown in a recent article in *Internationales Archiv für Ethnographie*, Leyden, 1893, pp. 190–192, "Ueber das Abplatten des Schädels und der Brust in Buool, Nordküste von Selebes," von Baron van Hoëvell. The little girl who was the subject of the process was but a few weeks old when observed by Mr. Bauermann, who bought the cradle with the flattening apparatus. A flat piece of wood is fastened to the upper head-board by strings and on a roll made of a piece of the sago leaf (*gaba-gaba*), which goes across the cradle below the infant's neck. The chest is also compressed for the purpose of flattening. A square wooden plate sewed in sago-fiber cloth lies upon the chest and is fastened on both sides to the cradle, which is a trough made of split bamboo. The child's arms are tied down and the spaces between the child and the sides of the cradle are filled with long narrow pillows. This

treatment begins a week after birth and is continued for at least six months. Neither health nor life are often endangered by this practice, which is common to the neighboring villages of Buool. A supplement to the article gives historical references to the same custom as found in various parts of the globe. Compression of the waist and body for the sake of beauty are frequent, but flattening of the chest in the above manner is perhaps unique.

A. S. GATSCHET.

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THE AMERICAN FOLK-LORE SOCIETY is about to undertake an extensive scheme of publication, under the name of "Memoirs of the American Folk-Lore Society." The first volume of this series, to be published in March, will be "Folk-Tales of Angola," by Heli Chatelain, late United States commercial agent in Loanda, West Africa. The work, which, together with an explanatory introduction, will give in original text and literal translation the oral literature of the West African coast, will be the first published representation of the ideas, emotions, and moral sentiments of races from which has been derived a great part of the negro population of the Southern States, and will therefore have an important bearing on American history. Among other works intended to continue the series are collections of the French Creole tales of Louisiana, and of the current superstitions still found in great mass among the English-speaking population.

W. W. NEWELL.

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HAWAIIAN FEAST.—As a reminiscence of olden times, the custom of the Hawaiian feast called *luau* is still kept up by the natives. These banquets, to which even foreigners are admitted, are given on every festive occasion. In some shady spot mats are spread, on which the company seat themselves, and aromatic leaves laid down between them serve for table-cloths. The *poi* is contained in wooden vessels, various preparations of meat are rolled in leaves, and, as great delicacies, crabs and other raw fish are produced. A sea grass called *limu* is considered a choice dish. For drink water is used, or, by the less temperate, *awa*, that intoxicating beverage of the Polynesians, which is prepared by fermentation from the root of the *awa* plant and has a strong narcotic effect.—*Marcuse in Scottish Geog. Mag., 1894, pp. 12, 13.*

THE BRINTON LECTURES.—Dr. Daniel G. Brinton delivered a course of six lectures on general archeology before the Academy of Natural Sciences of Philadelphia between January 29th and March 5th. The titles of the individual lectures were: The aims and methods of archeology, Africa in the semi-historic and prehistoric periods, Asia in the semi-historic and prehistoric periods, Europe in the semi-historic and prehistoric periods, and the Island World in the semi-historic and prehistoric periods.

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"CAMPHOR LANGUAGE" IN MALAY.—The camphor tree (*Dryobalanops camphora*) grows abundantly in certain parts of the peninsula, but only occasionally contains camphor crystals. Now, the camphor in question is not at all similar to that obtained from the camphor laurel; it is known in commerce as Borneo camphor, or Borneol, and is in great demand by the Chinese, who use it in embalming their dead, as an incense, and in medicine. Being rare, it always commands a high price. As it by no means follows that each camphor tree contains this valuable product—in fact, it being rather the exception than the rule—recourse must be had to the species of witchcraft known as "Patang Kapor." Therefore, to insure good luck, the hunters while on their expedition must speak the camphor language and observe certain practices in order to propitiate the spirit of the camphor tree, which is known by the Jackun name of *Bisan* (lit., a woman). Her resting-place is near the trees, and at night when a peculiar noise, much resembling that of a variety of cicada, is heard in the forests, the Bisan is abroad, and camphor will surely be found in the neighborhood. The language of the camphor spirit consists of a mixture of Jakun and Malay words, with a large proportion of words of Malay origin, but curiously altered or reversed.—*Lake in The Geographical Journal, London, April,* 1894, *p.* 286.

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## A QUARTERLY BIBLIOGRAPHY OF ANTHROPOLOGIC LITERATURE.

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